

WATSON'S
PRINCIPLES & PRACTICE
OF PHYSIC
ABRIDGED.





WATSON ABRIDGED:

A SYNOPSIS OF THE LECTURES ON THE

PRINCIPLES AND PRACTICE OF PHYSIC,

DELIVERED AT KING'S COLLEGE, LONDON,

BY

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(ABRIDGED FROM THE LAST ENGLISH EDITION.)

WITH A CONCISE BUT COMPLETE ACCOUNT

OF THE PROPERTIES, USES, PREPARATIONS, DOSES, &c., (TAKEN FROM
THE U. S. DISPENSATORY,) OF ALL THE MEDICINES MENTIONED
IN THESE LECTURES, AND WITH OTHER
VALUABLE ADDITIONS,

BY

J. J. MEYLOR, A. M., M. D.

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Entered, according to the Act of Congress, in the years 1860 and 1866,

By JOHN J. MEYLOR, M. D.,

In the Clerk's Office of the District Court of the United States for the Eastern District
of Louisiana.

TO

SIR THOMAS WATSON, M. D.;

Bart.; Pres. R. C. P.

THIS ABRIDGMENT OF HIS MOST VALUABLE LECTURES

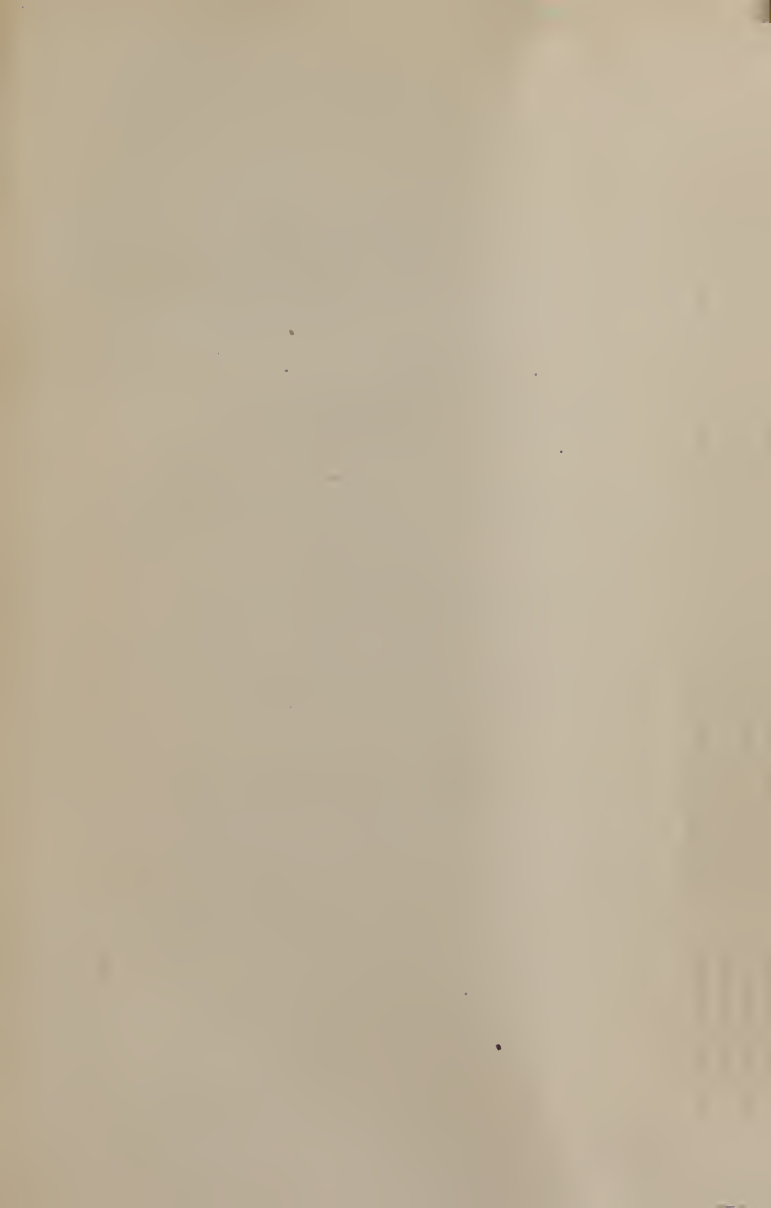
ON THE

PRINCIPLES AND PRACTICE OF PHYSIC,

Is Most Respectful'y Dedicated,

AS A TESTIMONIAL OF HIGH APPRECIATION OF HIS TRANSCENDENT PROFESSIONAL
TALENTS, AND AS A GRATEFUL ACKNOWLEDGMENT OF HIS KINDNESS
IN APPROVING OF THIS WORK OF HIS SINCERE ADMIRER,

THE AUTHOR.



PREFACE.

IN presenting to the medical public this Abridgment of so important and well-known a work as Watson's Lectures on the Principles and Practice of Physic, it is due to the Profession to state what were the objects had in view in its preparation, and what are the merits claimed for it.

The principal object that induced the making of this Abridgment was to afford young practitioners, who are often at a loss what to do on their first "sick call," and country and other physicians, whom numerous professional duties prevent from consulting more extended works, a convenient and expeditious means of reference in their daily rounds. Another, but no less important, object was to supply medical students, during lecture seasons, with a ready means of reading over, in a few minutes, the various subjects treated of in his daily lecture by the Professor on Practice.

The merits of this Abridgment and the advantages claimed for it are: 1, that it is of pocket-size; 2, that it contains every thing of importance to be found in the large work; 3, that the lectures, being short, can be read in a few minutes; 4, that the matter of each lecture is divided, according to the subject, into parts, by such side-heads as Symptoms, Treatment, Causes, Diagnosis, Prognosis, &c., thus rendering it easy to obtain, at a glance, any required information; 5, that, being numbered as in the large work, the lectures can readily be compared with the original;

6, that, in addition to the various tables, and the List of Poisons, their Symptoms and Treatment, it contains a short account of the Uses, Preparations, Doses (taken from the United States Dispensatory) of the many medicines mentioned in the work.

It may be supposed, with regard to some of the lectures, that they are too short to contain all the substance of the original. A careful comparison of the two, however, will show this supposition to be totally groundless; for great pains have been taken, and much anxiety felt, to make this little work what it claims to be, a faithful Abridgment of Watson's Lectures.

Should any of the first few lectures appear disconnected in their parts, or rather short, it must be remembered that they treat of general principles which often have no close connection with each other, and that many of these principles often form the subject of a single lecture. The rest of the lectures, however, which treat of particular diseases, are intimately connected throughout all their parts; so that the reader obtains clear and connected ideas of the matter of each as he progresses.

Those lectures that treat of one or two subjects are generally of moderate length; but those that treat of many or very important ones, are necessarily longer.

With these remarks, this little work is given to the public, it being hoped that the profession will read before passing judgment on it, and that they will not be too severe in their condemnation, if it fall short of what they think it should be.

To the many eminent physicians throughout all parts of the country, who, by approving of the Author's efforts and plan in preparing this Abridgment, have greatly encouraged him in his labors, he takes this means of tendering his most cordial thanks.

J. J. M.

A Letter from Sir T. Watson, M. D., Bart.

The Author takes great pleasure in laying before the medical public the following letter, received by him from Dr. T. Watson:

16 HENRIETTA STREET, CAVENDISH SQUARE, W.,
June 7, 1866.

DEAR SIR: I take great shame to myself for having suffered your very flattering letter to remain so long without a reply. I assure you that I am very proud of the favor with which my Lectures have been received in America, and I must offer to yourself in particular my best thanks for the honor you have done them and me in condensing them into a more portable and convenient form. I only regret that I have not been able to find time—and perhaps I never may be able—to revise them for a new edition. Our common profession is making such large advances every year, that a work on the Practice of Physic must very soon become stale and defective. Should I ever accomplish the revision I desire to make, one of the first persons to whom I should wish to transmit a copy across the Atlantic will be yourself; and I shall receive with pleasure and gratitude the copy of “Watson Abridged” which you have been kind enough to promise me.

It is always a great gratification to me to see any of my American brethren of the profession, and * * * *

Believe me, dear sir, to be, with much regard,

Very truly yours,

THOS. WATSON.

DR. MEYLLOR.

WATSON'S

PRINCIPLES AND PRACTICE OF PHYSIC.

ABRIDGED.

INTRODUCTORY LECTURE.

DISEASES are *local* or *general*; local, when they affect a definite portion only of the body; general, when they affect similarly the whole of some one system that pervades the entire body. The *principles* of medicine are those general truths and doctrines which have been ascertained and established.

LECTURE II.

PATHOLOGY is morbid anatomy and something more. It comprehends a knowledge—1st, of the changes to which the several parts of the living body are subject; 2d, of the processes which work these changes; 3d, of the causes of these processes; 4th, of the consequences of the same changes or of their symptoms. Pathology is *special* or *general*. Special contemplates particular diseases; general treats of the morbid conditions common to the entire system, or to the whole of each of the several tissues composing the system. The solid parts of the body may be altered by disease, in *bulk*, in *form*, in *consistence*, in their *intimate texture*, and in *situation*. The fluids may be altered in *quantity*, in *quality*, and in *place*. The alterations in *bulk*, without change of texture, are increase or *hypertrophy*, and diminution or *atrophy*.

HYPERTROPHY.—In hypertrophy nutrition preponderates over re-absorption. Hypertrophy, in most cases, is a compensatory and conservative condition, and morbid only inasmuch as it is an effect of disease. Hypertrophy of the voluntary muscles is generally harmless; of the involuntary, generally connected with disease. It affects the glandular and other systems. It may affect one only of the component tissues of an organ. There may be hypertrophy without enlargement: 1st, in hollow organs, where the increase is central; 2d, in any organ, where it is confined to one or more tissues, the others at the same time wasting; 3d, where the compo-

nent particles are multiplied, the size, shape, &c., remaining unaltered. There may be enlargement without change of structure, and yet no hypertrophy, as in congestion of the liver and spleen. The conditions which give rise to hypertrophy are: 1st, increased healthy action in the part; 2d, an increase in the blood of the particular materials which a part appropriates in its nutrition or secretion; 3d, an increased afflux of healthy blood. Increased function produces increased nutrition; but of the converse of this proposition there is no certainty.

Hypertrophy may be produced: 1st, by the influence of certain localities, as in bronchocele; 2d, by congenital or acquired conditions of the body, as the enlarged upper lip in the strumous diathesis; 3d, by certain habits of life, as full diet with bodily inactivity, which increase the adipose tissue; 4th, by removal of certain parts, as the testicles and ovaries, which causes increase of fat. The bulk of organs may be augmented by an undue quantity of their natural contents, or by foreign matter: in either case the function of the part itself, or of neighboring or distant parts, may be disturbed or suspended.

ATROPHY is the decrease of the natural size of a part without alteration of texture. It depends upon diminution or defect of nutrition, or of supply of healthy arterial blood, as in inaction, compression, chronic inflammation, and the various diseases which, affecting the digestive organs, or causing some unnatural drain on the system, produce *general* atrophy or emaciation. Certain parts, having answered their temporary purposes, become atrophied, as the thymus gland, supra-renal capsules, ovaries, &c. Atrophy may be limited to one or more of the component tissues of a part. It may exist without decrease of absolute size, as in the heart sometimes, and in the bones.

The *consistence* of parts may be changed; 1st, by *induration*, when they become harder and firmer; 2d, by softening or *ramollissement*. Solid and hollow organs may be indurated without change of tissue; the solid by fulness of blood-vessels; the hollow, by accumulation of fluid. Induration may depend upon expression of fluid, or compression of parts, as when the lung is compressed by fluid in the pleura. It may also depend upon fluids or solids in the tissues, as in hepatization of the lung and in pulmonary apoplexy. The fluids may congregate *within* their proper vessels and produce induration; as in the veins, biliary and urinary passages. Morbid masses, such as tubercles, cancer, &c., may likewise cause induration.

LECTURE III.

SOFTENING.—There is scarcely any tissue of the body in which softening may not take place. It affects the brain or spinal cord, the areolar tissue, muscles, mucous membrane and bones; as in *mollities ossium*. Softening may proceed from inflammation, insufficient sustenance, impoverished blood, or (like atrophy) from defective nutrition.

TRANSFORMATION OF TISSUES.—In the proper place of one natural tissue we sometimes find another, which last is thus *unnatural* in regard to its situation, but natural in all other respects. Either the original tissue has been converted into the new, or having disappeared, the new tissue has taken its place. This last is perhaps always the case. Muscular tissue is never changed into areolar, nor is areolar ever changed into muscular. In false joints the muscular tissue is not converted into fibrous or ligamentous tissue, but the muscular disappears and the fibrous takes its place. In

the change of cartilage into bone there is simply an increase of the phosphate of lime. Accumulations of fat are morbid changes and not conversion of tissues. The mucous membrane, lining sinusses, fistulous openings and tubes, is not conversion of tissue. Many of these changes are restorative in their tendency, thus proving the *vis medicatrix nature*. The intimate texture of parts may be further altered by an absolute disappearance, or confusion of all regular structure; as in the effusion of fluids which become solid, or in the growth of solids which do not belong to the body. These alterations of solids depend upon lesion of nutrition, the seat of the nutritive process being in the capillary system.

The solids may be changed in *situation*, as is often the case with the viscera of the chest, abdomen and pelvis.

LECTURE IV.

MORBID ALTERATIONS OF THE BLOOD, &c.—The animal fluids are the blood, the fluids that enter the blood, and those that proceed from the blood. The fluids that enter the blood are intended for its renewal or enrichment, as the chyle; or are to be carried out of the body, as bile, &c. The fluids that *leave* the blood are expended in the growth and maintenance of parts, or aid some definite function, as saliva, gastric juice, &c.; or are intended to be excreted. The blood is subject to remarkable morbid variations; 1st, in *quantity*; 2d, in the proportion between its proximate constituents, as in watery blood; 3d, in its chemical composition, as in scurvy and purpura.

PLETHORA, ANÆMIA.—The blood may exist in too great *quantity* throughout the body, as in persons of full living and sedentary life; or it may be in too great abundance in certain parts only. These conditions are called *general* and *partial plethora* or *general* and *local congestion, determination, hyperæmia*. Congestion and redness of one or more parts are generally attended with paleness and decrease of temperature of other parts. General plethora does not cause a proneness to inflammatory complaints, although the fibrin and red particles are richly abundant. This unnatural and unsafe condition is redressed by removal of a part of the superfluous blood, low diet, and active exercise.

POVERTY OF BLOOD, ANÆMIA, which consists in decrease of fibrin and deficiency of red particles, may be produced by disease, defective nutrition, the large or habitual loss of blood; as in piles, hemorrhage, &c. Pathology teaches that the red particles require more time for their restoration than the other constituents of the blood.

CONGESTION.—There may be a deficiency of the whole mass of blood circulating in the body, and a deficiency of its nutritive materials, and yet often be local congestion. This is owing to the defective supply of blood sent to the brain and nerves, which are thus disordered in their functions, and in turn derange the balance of the circulation.

Local congestion may also be produced, upon the surface of the body at least, by friction, by high temperature, by stimulants, mechanical or chemical. This is *active* congestion, otherwise called *sthenic* or *active hyperæmia*. The capillary vessels are the seat of the changes which are wrought when there is something more than mere local plethora. Active congestion, as such, does not last long; it either passes into inflammation, or soon ceases. Active congestion sometimes causes hemorrhage, by which it is relieved. This congestion is relieved by the abstraction of blood from

the part,—this, however, is not always sufficient; it is even sometimes hurtful.

Mechanical congestion is that morbid fulness of the capillary vessels produced by some mechanical obstacle to the return of the blood to the heart; as in disease of the liver, &c. *Passive* congestion, also called *passive* or *asthenic hyperæmia*, is a loaded condition of the capillaries, depending upon the loss of their natural elasticity and propelling power. This state may be removed by friction or stimulants.

In the production of *active* congestion the arteries are principally concerned; in *mechanical*, the veins; in *passive*, the capillaries.

Internal organs also are liable to passive congestion; as is often the case in the lungs. Active and passive congestion are apt to *recur*, and in those parts which have previously suffered from them. Mechanical congestion is often the prolific source of hemorrhage, and the almost constant precursor and immediate cause of dropsical accumulations. The blood may be excessive in quantity, yet poor in materials, serous, deficient in globules and fibrin and color; in this condition of the blood also are dropsies apt to arise.

LECTURE V.

MODES OF DYING.—Life is inseparably connected with the continued circulation of the blood. The different modes of dying, therefore, depend upon the different ways in which that circulation may be brought to a stand. For carrying on and maintaining this essential function, there are the heart and other blood-vessels, the lungs, and lastly, the motor and regulating power of these two, the nervous system. Each of these systems must continue in action, or the circulation will stop and life come to an end: therefore their functions are called *vital functions*, and the heart, the lungs, and the brain are called *vital organs*. The phenomena of dying vary remarkably according as the interruption begins in one or other of these organs. That the heart may continue to propel the blood, there must be in it—1st, the power or faculty of contracting; 2d, sufficient blood to be moved and also to stimulate it to contract. There are, therefore, two ways in which death begins at the *heart*. The sole purpose of the respiratory apparatus is to submit the blood to the chemical action of the atmosphere. For this purpose circumfused air must enter and depart at short intervals, and the chest must have alternating movements to cause its entrance and exit. These movements are essentially involuntary, depending upon the medulla oblongata, and, therefore, upon the nervous system. The action of the heart is not directly or necessarily dependent on nervous influence (witness anacephalous fœtus) further than as it is necessary to respiration and the introduction of nutriment, yet very sudden and extensive injury or shock to the nervous system may instantly paralyze the heart and stop its action. There are two forms of death beginning at the *head*, in one of which the brain and nerves do not directly affect the heart, in the other they do. In the former case the lungs and respiration are first affected and then the heart.

Death, in disease, is usually complicated, many parts and functions being affected at once.

DEATH, BEGINNING AT THE HEART.—One form of death, beginning at the heart, is death by *anæmia*, caused by deficiency of blood in the heart; as in flooding, &c. The phenomena are, paleness of lips and face, cold sweats,

dimness of vision, dilated pupils, vertigo, a slow, weak, irregular pulse, speedy insensibility, often nausea, even vomiting, restlessness, tossing of limbs, transient delirium, breathing irregular, sighing and at last gasping, and convulsions generally. After death the heart is found empty, or nearly so, and contracted.

Another form of death, beginning at the heart, is death by *asthenia*, caused by a failure of the contractile power of the heart; as from the use of some poisons. After death by *asthenia* each chamber of the heart is found filled with its proper kind of blood. *Syncope* is the state of suspended animation, common to both these forms of dying. In *anæmia* the nervous functions fail from lack of blood sent from the heart to the brain; in *asthenia* the heart fails for want of the nervous influence; as in death from grief, joy, terror, concussion of the brain, blows on the epigastrium, lightning and electricity, certain kinds of apoplexy, &c. In death by *asthenia*, occurring in disease slowly, the pulse becomes very feeble and frequent, muscular debility extreme; but the senses remain perfect, the hearing sometimes painfully acute, and the intellect is clear to the last; as often, in acute peritonitis, malignant cholera, and extensive mortification. Akin to this form of dying is that produced by lingering and wasting disorder, as phthisis. Here there is a deficiency of the natural stimulus to the heart.

DEATH BY APNEA, BY COMA.—Death caused by sudden deprivation of air to the lungs, as in smothering, immobility of the chest and abdomen, rigid spasm or paralysis of the respiratory muscles, &c., is called *asphyxia*, suffocation, *apnea*. Death, caused by the insensibility of the respiratory muscles, is called death by *coma*. The phenomena of sudden and complete privation of air are, strong but vain contractions of the respiratory muscles in breathing, distress extreme but transient, followed soon by not unpleasant sensation of vertigo, then by unconsciousness and convulsions; finally, irregular twitchings of the limbs alone perhaps remain, the muscles relax, the sphincters yield; but the heart and pulse beat for a short time after apparent death, so that, *even after the heart has ceased to act*, artificial respiration may save life. The above symptoms of *apnea* occupy only two or three minutes, the face being first flushed and turgid, then livid and purplish, the cervical veins and those of the head swollen, the eyeballs protruded; at length the heart stops and life is extinct. The convulsions and insensibility and the other symptoms are caused by venous blood circulating in the arteries of the brain and rest of the body. The circulation fails mainly because venous blood circulates and finally stagnates in the capillaries of the lungs. Death begins in the *lungs*.

ANATOMICAL CHARACTERS OF DEATH BY APNEA.—The left side of the heart contains some *dark* blood; the right side, lungs, the cavæ and the whole venous system is *gorged* with dark blood. After sudden death blood seldom coagulates, so that if accumulated in any part by rapid *apnea* it may subside before the body is examined.

Incomplete privation of air (or the division of the *par vagum* of both sides) causes the air tubes and cells to fill with serum and thus impede the respiration. Death by *apnea* may be produced by any thing which narrows the chink of the glottis, by warts, laryngeal œdema or inflammatory swelling, false membrane; by disease of the lungs or of their mucous membrane, effusion into the pleura preventing sufficient air from entering the lungs; by disease of the heart and great thoracic blood-vessels affecting the quantity of blood in the lungs; by abdominal swellings thrusting up the diaphragm. In death by *coma*, certain morbid states of the brain produce more or less stupor, insensibility, sometimes sudden, sometimes gradual, the respiration becomes slow, irregular, stertorous, and finally

fails. In death by *apnea* the chemical functions of the lungs cease first, then venous blood circulates through the arteries, suspending the sensibility; in death by *coma* the sensibility ceases first, then the functions of the lungs. When death threatens by way of *coma artificial* respirations may sustain organic life till the insensibility passes away. The essential anatomical characters of death by *coma* are the same as those by *apnea*.

All these modes of dying are apt to take place in fevers; that by *coma* happens principally when the brain is much affected, as by headache, delirium, stupor; that by suffocation or *apnea* happens when the lungs are seriously affected; that by *syncope* happens sometimes in fever, when the bowels are principally affected, as when there are much diarrhoea and ulceration of the intestinal glands.

LECTURE VI.

CAUSES OF DISEASE.—The causes of disease are *predisposing*, *exciting*, and *proximate*. The *proximate* cause is nothing else than the disease itself. A *predisposing* cause is any thing which has had such a previous influence upon the body as to have rendered it unusually susceptible to the *exciting* cause of the particular disease. An *exciting* cause is that which produces the disease.

The sources of disease are sometimes atmospherical, as extreme heat and cold, sudden variations of temperature, excessive moisture or dryness, electric conditions, differences of pressure, as shown by the barometer, deficiency of light; malaria, contagious and noxious gases; other sources are, bad and hurtful food, insufficiency of healthy food and excess in eating and drinking; poisons; various trades and avocations; deficiency of exercise; too much sleep or too long-continued want of repose; excessive intellectual toil, violent passions, strong mental emotions; vicious and exhausting indulgences; above all, protracted anxiety and distress of mind. Diseases may likewise be hereditary or congenital.

HEAT.—Life is compatible with a very great range of temperature. It may be sustained, *for a short time*, at very high degrees of temperature (240°, 260°) without detriment. The most intense cold that occurs naturally on the surface of the globe is perhaps the lowest compatible with life. Under the action of the above very high temperatures the animal heat and respiration are little affected, but the pulse is very much quickened. Heat stimulates the *organic* functions, but when applied for some time it has a sedative or depressing influence upon the *animal* functions, *i. e.*, upon the nervous system, causing languor, lassitude, &c. High temperature, when long-continued, stimulates the liver, increasing the quantity of bile and altering its sensible qualities, and often causing hepatitis. This morbid bile causes vomiting, diarrhoea. In tropical climates heat causes violent disorders of the stomach and intestines, with the evacuation of large quantities of vitiated and acrid bile, and also acute hepatitis, suppuration and abscesses, and yellow complexion. The hot atmosphere is the *predisposing*, and exposure to cold the *exciting* cause, of hepatitis. Heat is sometimes an *exciting* cause, as in sunstroke, *insolation*. Some regard this as a sort of apoplexy by way of *coma*, but the remedies of apoplexy have failed to cure it. The natives of India pour cold water upon the head. Stimulants, as rum and water, often answer well. *Insolation* is akin to concussion. Great heat produces cutaneous diseases, as *prickly heat*.

COLD.—The continued application of cold acts as a sedative upon the organic functions, as shown by the *cutis anserina*. The heart and the whole arterial system becomes weak. Cold air in motion, or moist, is more potent than in the opposite condition. Cold, especially when combined with exercise and fatigue, causes, generally, but not always, an overpowering tendency to drowsiness. Often, before torpor comes on, the sensations are blunted, the intellect confused, and the person affected appears *intoxicated*. If persons in this state are suffered to sleep, the cold still continuing, they soon die.

LECTURE VII.

CAUSES OF DISEASES—Continued.—**COLD, HEAT.**—Cold, when not too intense, or too long applied, or when counteracted by exercise and clothing, becomes a *tonic*. The axiom, that *sudden vicissitudes* of temperature are dangerous, is not universally true; witness the Russian mode of bathing. If the power of evolving heat be entire, active and persistent, no peril need attend even violent alterations of external temperature. Heat, if steady and permanent, counteracts the applied cold; as in fevers. Cold is also counteracted by exercise and by any thing producing heat, provided the cause of the heat remains steady in action, that there is no local disease, and that the body is not fatigued and fast losing its heat. This principle obtains whether the cold be applied externally or internally. When life is in jeopardy from draughts of cold water, apply warmth to the epigastrium, and give laudanum in free doses. If death does not speedily follow the application of cold, inflammation is very apt to arise. Heat, accumulated by exercise, is speedily dissipated by profuse perspiration and a state of rest. Any thing which weakens the system, heightens the effect of cold; as fasting, evacuations, &c. The faculty of evolving heat is very feeble in the old and in the newly-born. The bad effects of cold depend upon the intensity of the sensation produced, but still more upon the duration of that sensation. Even slight chilliness, long continued, is hurtful. The effects of cold are often counteracted by passions, or conditions which engage a close attention to one object; as spasmodic asthma; by that state of the body, in which sensibility is greatly diminished, as mania; and by the power of habit. Sleep diminishes the power of resisting cold; in it we are conscious of unusual sensations produced by cold.

The experiment of *hardening* should never be tried on any child or person ailing, or unsound, or showing signs of present or future disease, especially scrofulous. Sufficient clothing and exercise should be used during the experiment. An *abiding* sense of chilliness must never be permitted. The best mode of fortifying the body against cold is the cold bath, especially the shower bath, and then used in the morning. If its use is followed by warmth it is good, but if by headache, chilliness, languor, &c., it is hazardous.

Catarrhs and pectoral complaints belong to the winter and spring; bowel complaints to the summer and autumn. The mucous membranes of the air passages sympathize with the skin under the agency of external cold; those of the stomach and intestines under that of atmospheric heat. The mortality of winter is greater than that of summer, especially among the very old and very young; malaria or epidemics may change this order. The number of deaths by palsy and apoplexy is greatest in winter; because

then the cold drives the blood from the surface into the head and other internal parts, and, besides, the pectoral complaints, dyspnea, coughs, &c., which prevail in winter, embarrass the respiration and greatly impede the return of the venous blood from the head, producing cerebral congestion and its consequences, especially when the arteries of the brain are diseased. A severe cold season destroys a number of persons rapidly, and in others occasions diseases which prove fatal in four or six weeks. Generally in continued fever the pectoral symptoms are most troublesome in the spring, the abdominal in the autumn. It is said that, in continued fever, the head affections are more frequent and severe in winter. Impure air (not air with specific poison) is a powerful *predisposing* cause of disease, but never an exciting cause, except perhaps of scrofula.

In some persons, especially those hereditarily so inclined, small causes produce disease; in others, on the contrary, no amount of exciting causes will have any injurious effect. Hereditary disease may skip over a generation or two, and thus a parent may *transmit* a disease which he himself does not *possess*. When one parent only bears the transmissible tendency, the disease appears to be most apt to break out in the children who most resemble that parent in their physical conformation and appearance.

Whether *acquired* peculiarities can be transmitted or not is perhaps yet uncertain. When both parents have a tendency to any complaint, there will be a double probability of a diseased offspring. Intermarrying in the same family is therefore often very objectionable.

LECTURE VIII.

SYMPTOMS IN DISEASE.—A symptom, in disease, is any thing or circumstance happening in the body of a sick person, and capable of being perceived by himself or others, which tends to point out the seat or nature of the disease, (*diagnosis*,) its probable course and termination, (*prognosis*,) or its treatment. Those symptoms or combinations of symptoms, which disclose the place and nature of the disease, are called *signs of disease*; those which teach us what to do are called *indications of treatment*. There are also *prognostic* signs—*symptoms* and *signs* are not synonymous words. Signs are deduced from symptoms by arranging and comparing them, and noticing the circumstances under which they occur. Signs are symptoms interpreted. *Pathognomonic* symptoms are those which infallibly settle the nature of the disease.

By *commemorative circumstances* is meant a knowledge of the previous history and condition of the patient. Symptoms are *direct* or *indirect*; direct when they relate to the very part affected; indirect when they declare themselves through the medium of some other part, or through the constitution at large. *Negative* symptoms are derived from the regular functions compared with disease.

The symptoms which consist of *morbid* changes are, 1st, uneasy, unnatural or impaired *sensations*; 2d, disordered or impeded *functions*; 3d, alteration of *sensible* qualities, *i. e.*, of structure or appearance. These last are called *physical* signs, when they come under the direct cognizance of our senses. *Pain*, one of the changes of sensation, varies in kind and degree according to the part affected, and to the morbid action. Pain is said to be *sharp*, *shooting*, *dull*, *gnawing*, *burning*, *tearing*, &c. *Tenderness* is pain on pressure. Pain often takes place in a part, distant from that really affected, (indirect or sympathetic pain,) as the pain of the right

shoulder in inflammation of the liver or diaphragm. Other uneasy sensations are itching, prurigo, tingling and pricking, nausea, giddiness or dizziness, technically *vertigo*, sinking, sensation of weight, of tightness and fulness, drowsiness, tenesmus, strangury, heartburn, excessive hunger, or thirst, or depraved appetite. Nausea may be a direct sign of stomach disease, or an indirect sign of disease in some distant part, as the brain or kidney; the same may be said of vertigo. When, with pain or deranged sensation, we find *functional* derangement also of a part, there is additional reason for concluding that the part is the seat of disease. The functions of the brain and nerves may be affected, causing numbness, anæsthesia, dimness of sight or blindness, amaurosis. The hearing may be disordered, becoming obtuse or preternaturally acute—this last is a bad symptom. *Tinnitus aurium* sometimes depends on the strong throbbing of the arteries, and is often a symptom of diseased cerebral arteries and a precursor of apoplexy or palsy.

The intellect may also be affected, and, as this is a species of first degree of delirium, it should be watched. The delirium of fever is always most marked at night.

Voluntary motion may be excessive, or deficient, or perverted. Excess is not common nor very important; deficiency of it, or muscular debility, is very common, being an essential part of fever, not however necessarily implying any great danger. Debility late in disease shows a tendency to death by asthenia and points to a strengthening and supporting treatment. It is sometimes the principal symptom, as in hemiplegia, &c., and often indicates serious disease. *Spasm*, which is an irregular and violent contraction of the muscular parts, is another disorder of voluntary motion; as in cramps, tetanus, &c. *Tremor* is near akin to spasm. Spasms, convulsions and tremors sometimes bode great danger, sometimes none at all.

DYSPNEA.—The respiratory apparatus may be affected. Dyspnea, difficulty of respiration, depends on various causes; as inflammation of the lungs, pleuræ, &c. It is almost always most troublesome when the patient lies on his back, for then the diaphragm is pushed up by the viscera. Upright breathing is called *orthopnea*. Dyspnea sometimes comes on in paroxysms; as in asthma. Cough is a violent spasmodic action, consisting in a full inspiration, then of a firmly closed state of the glottis, and finally of a sudden and forced expiration of air; the object appears to be to expel substances from the lungs. There are several varieties of cough, some denoting dangerous complaints, as in phthisis, &c.; some not. Some are *diagnostic*.

SNEEZING is sometimes a symptom, as in catarrh; sometimes a primary disorder. Sneezing combined with cough affords a *presumption* that the cough is not phthisical.

PULSE.—The qualities to be attended to in the pulse are its frequency, regularity, fulness, and force. The average number of pulsations in a healthy adult is from 70 to 75, but it may reach 80 or 90, or even be as low as 60. In early life the pulse is more frequent, in old age more slow, than the standard. Its beats are more numerous in the standing, less in the sitting, and still less in the recumbent posture. There are *variations* and *fluctuations* of the pulse in respect to frequency; as in hydrocephalus. Irregularity of pulse is natural to some persons. There are two varieties of irregular pulse; in one the motions of the arteries are unequal in number and force, a few beats being occasionally more rapid and feeble than the rest; in the other variety a pulsation is from time to time left out—the pulse is said to intermit. A *hard* pulse is one which can hardly be abolished by pressure, the blood forcing its way beneath the finger. A *full* or *large* pulse is one which is felt to strike a large portion of the finger; a

small pulse strikes a narrow portion of the finger; a *wiry* pulse is one which is *small* and *hard*.

PHYSICAL SIGNS.—Changes of sensible qualities are exemplified in the variations of the temperature of the body; the color of the surface, especially the face; diminution or increase of bulk; the latter when general is called corpulence; when partial, swelling; and in various other symptoms, especially those which are detected by auscultation. Wasting or emaciation sometimes occurs in complaints not commonly dangerous, as dyspepsia; sometimes in fatal maladies, as phthisis.

LECTURE IX.

INFLAMMATION.—Inflammation affects all parts furnished with blood-vessels. It possesses healing tendencies, as in the curing of wounds, &c. It is an *instrument of cure*, as in obliterating the cavity of the tunica vaginalis in hydrocele, &c.

Symptoms.—The symptoms of inflammation in external parts are pain, *preternatural* redness, preternatural heat, and swelling. *Phlegmonous* inflammation is that violent kind in which the part seems on fire. When the inflammation becomes somewhat intense, other symptoms occur, as chilliness and feebleness at first, then soon heat of the whole surface, hot and dry skin, pulse more than usually full and hard, lassitude with headache and wandering pains in the limbs. The patient is unable or unwilling to exert himself, is unapt for mental exertion, gets confused and restless and sleeps ill, loses his appetite, tongue becomes white, mouth parched, thirst very great, and the secretions are deranged and diminished. This is *inflammatory fever*, also called sympathetic fever, symptomatic fever. This inflammatory state may terminate in *resolution*, be *resolved*; *i. e.*, the various symptoms may gradually disappear and the part return to its natural condition. Or the symptoms may become aggravated, the swelling pointing, looking white in the centre and becoming softer; the pain being of a throbbing kind; a pulsative sensation, beating with the heart, being felt in the part, and often a feeling occurring of something giving way within it; the cuticle finally breaking and a yellow cream-like fluid, called *pus*, being poured out; and then, generally, the local symptoms abating speedily. This is *suppuration*.

Meanwhile, especially if the discharge of pus be long-continued or profuse, slight but frequent shiverings or feelings of chilliness take place, followed by flushes of heat, ending in perspiration. This is *hectic fever*. If *mortification* result from the violence of the inflammation, the vivid red color alters to a purplish, or livid, or black, or greenish black, the tension of the part exists no longer, the cuticle is raised by sanious fluid, the pain ceases, the part loses all sensation—is dead and putrid and emits a peculiar and offensive odor. When the injury has been extensive, the constitution is disturbed, the patient grows more and more feeble and delirious, has involuntary startings of the tendons of the voluntary muscles, his pulse is weak and very frequent, his tongue becomes dry, brown, and tremulous, his lips are black with accumulated sordes, his countenance is shrunk, haggard, damp, and ghastly, his stools and urine escape unawares. These are features of an advanced stage of *typhus fever*. The dead part may *slough* off. During the inflammation, blood drawn from a vein shows the *buffy coat*; *i. e.*, yellowish or buff-colored fibrin on the surface of the coagulum.

PAIN, HEAT, REDNESS, AND SWELLING.—The *pain* varies much in degree and kind according to the kind of inflammation and part affected. It results from the stretching of the vessels and textures of the part and the implication of the nerves. The pain of inflammation of *external* parts and serous membranes is generally greater than that of the substance of the viscera or mucous membrane. The pain of inflammation, especially of internal parts, sometimes precedes any other apparent change. The pain is sometimes continued, but irregular in severity, sometimes intermittent and even periodic. It is uncertain whether the state of the blood-vessels is determined by that of the nerves or the reverse. Inflammatory pain is usually *aggravated by pressure*; other pains usually are not. Gradual pressure, applied *uniformly*, steadily, and gently to the *whole* organ or part affected, sometimes relieves the pain, as in orchitis.

Stupor or *coma* may abolish all sense of pain. The *heat* of inflammation does not rise above the maximum heat of the blood in the centre of the body. The natural heat of the blood is about 98° to 100°. The increased heat depends on the increased influx of arterial blood, and therefore of oxygen, to the part. Animal heat is caused by the mutual action between oxygen and the elements of the tissues, carbon and hydrogen. The heat is sometimes not perceived.

The *redness* depends on the quantity of blood in the vessels of the part, or an extravasation of the coloring matter of the blood. The tint of the redness depends on the kind and degree of the inflammation and the part affected. Sometimes it is bright and vivid, as, generally, in the acuter forms and earlier stages; sometimes it is dark or livid or purplish, as in some chronic cases, and when there is a tendency to gangrene; sometimes it is in patches; sometimes in a general blush. Redness exists in inflammation of internal parts. Inflammation may sometimes exist and yet the redness not be perceived. The *swelling* depends early in the disease in part on the distension of the blood-vessels, but especially on matter poured out into the parts, as blood, serum, albuminous fluid or coagulable lymph, and pus; these are the *products* of inflammation. The presence of pus points to inflammation *somewhere*; coagulable lymph in a part points to inflammation of *that* part. The degree of the swelling depends on the intensity of the inflammation and on the nature and texture of the part. Inflammation may exist without any appreciable swelling; as in scleritis.

The blood consists of red particles or globules, and of a transparent colorless fluid called liquor sanguinis. The liquor sanguinis consists of serum and fibrin. The clot in coagulated blood consists of fibrin and red particles. The period of *incubation* is the time from the application of the exciting cause to the lighting up of the inflammation. The fibrin, which, in inflammation transudes the blood-vessels, concretes, filling up tissues, or forming false membranes on surfaces. There are *colorless corpuscles* in the liquor sanguinis.

Most of the events of inflammation are traceable to the changes which stagnant blood undergoes. Coloring and adipose matters are absorbed from the inflamed part. Coagulable lymph often becomes organized.

Whether in inflammation the action of the small vessels is increased or diminished, is undecided. Arterial trunks leading to inflamed parts often pulsate more strongly, and, when opened, project blood further than natural. Veins leading from inflamed parts discharge blood faster and more copiously than natural. The circulation around the inflamed part is greatly increased, but in the part it may be stagnant or nearly so. In inflammation there is an increased afflux of blood to the parts inflamed.

LECTURE X.

INFLAMMATION—Continued.—The buffy coat is sometimes flat and wide, often contracted and concave, *cupped*. Inflammation may exist without the buffy coat, and this without the former. The buffy coat is pure fibrin mixed with serum, and is identical with coagulable lymph. The venous blood of inflammation, when drawn, coagulates sooner than in health. A peculiar bluish tint on the surface of blood just drawn, shows that it is about to buff. That the buffy coat depends upon some *vital* change in the blood appears probable, as it is shown in some, but not in other portions of blood drawn at the same bleeding. The buffy coat may be thick, tough, contracted and cupped, the red portion being round, contracted, firm and detached from the sides of the vessel. This is usually the case in violent inflammation, occurring in strong constitutions, or in certain tissues, especially in fibrous or serous. Or the buffy coat may be thin, flat and easily broken, the coagulum being large. This is the case in slight or partial inflammation. Or the blood may be *sizy*; *i. e.*, the buffy coat is thick and abundant, but flat, soft and flabby, the coagulum often sticking to the vessel. In this case the local inflammation is accompanied by some other cause of general disorder, as continued fever, &c.

Blood, drawn by leeches, never buffs; that by cups, seldom. *Arterial* blood is liable to buff. Blood is more likely to buff when it flows in a full stream, or into a deep and narrow vessel. It is less likely to do so when it trickles from a small opening, or into a large, flat vessel. The buffy coat may be prevented, it is said, by a solution of caustic potass, by agitation, by receiving it in a very cold vessel, by its falling from the height of three or four feet. Generally a day or two elapses from the beginning of the inflammation, before the buffy coat appears. Generally, the more intense the inflammation, especially of fibrous or serous tissues, the more marked is the buffy coat.

The blood in general plethora and in pregnancy is often buffed without any inflammation. The danger in disease is not in proportion to the buffy coat. It may exist after further bleeding becomes dangerous. In acute inflammation there is a remarkable increase in the *fibrin* of the blood.

EVENTS OF INFLAMMATION.—1st. *Resolution.*—*Delitescence* is sudden and rapid resolution. *Metastasis* is the sudden disappearance from one part, and appearance in another, of the symptoms of inflammation. *Counter irritation, derivation* or *revulsion*, is stimulating distant parts to effect a cure. 2d. *Serous Effusion.*—*Edema* is serous effusion into areolar tissue. *Anasarca* is *œdema* on a large scale, produced by impediment to the venous circulation. Immense quantities of serum are often poured out in a short time, giving rise often to perilous conditions; as in pleurisy sometimes. A small amount may have the same effect, as in infiltration of the submucous tissue of the glottis, &c. Serous effusion often exists independent of inflammation. *Hæmorrhage* sometimes occurs as an event of inflammation. 3d. *Effusion of Coagulable Lymph.*—This often forms false or adventitious membranes, or elogs up parts. Union by the *first intention* is that by which the lymph unites the edges of cut wounds. *Adhesive inflammation* is that attended by exudation of lymph. Sometimes the coloring matter of the blood is also poured out, oftener, serum. Coagulable lymph often has a conservative tendency, preventing worse events. Lymph effused on inflamed surfaces readily becomes organized and comes

to look like areolar tissue condensed, or assumes the character of other tissues. The lymph is often effused and organized early, sometimes not for days. It is probable that the serous fluid permeates through the veins, but the fibrinous from the capillaries. 4th. *Suppuration*.—Healthy, *laudable* pus is an opaque, smooth, yellow, cream-like fluid, with no smell. Inflammatory lymph is *fibrinous* or *corpuscular*; the former is the coagulable, organizable, adhesive lymph already spoken of; the latter does not coagulate or organize, but its corpuscles undergo degeneration, often into pus-corpuscles. *Ichorous* pus is that in which the globules are few in proportion to the watery part; *sanious* is that tinged with blood. Mucus or an alkali in the pus, makes it viscid and slimy, or flaky and curdled. Sometimes when cold, it is horribly fetid. Healthy pus and healthy mucus are easily distinguished. Turiform mucus is known from pus by the microscope. Pus poured into a natural cavity is called *purulent effusion*; pus in a closed, unnatural cavity, formed by lymph and condensed tissue, is an *abscess*. The formation of pus is one step beyond the adhesive stage. This is often caused by the admission of air. Upon cut surfaces, open to air, pus is often formed. When suppuration takes place, the pain ceases or abates, except when the pus keeps up tension. Pus tends to soften and break down textures; lymph, to harden them. Pus is sometimes formed in a few hours, sometimes not for weeks. The duration of the suppurative process is not in proportion to the intensity of the inflammation. 5th. *Ulceration* is the absorption of lymph and of the surrounding tissues. Three things generally are going on at the same time in an ulcerated surface: 1st, effusion of plastic lymph, which forms granulations, these consisting of organized lymph; 2d, suppuration; 3d, absorption or removal of parts. Suppuration may not be apparent; as in ulceration of the cornea. When absorption predominates and the ulceration rapidly extends, it is *phagedenic*; when the texture perishes and drops off in sensible masses, it is a *sloughing* ulcer; when the process is slow, the lymph effused at the base and round the edge of the ulcer is hardened and the granulations deficient, the ulcer is *callous* or *indolent*. When the granulations are larger, softer, and more flabby than usual, and require to be repressed before the ulcer will heal, it is a *fungous* ulcer, and the granulations *proud flesh*.

LECTURE XI.

INFLAMMATION—Continued.—The sixth event of inflammation is *mortification, gangrene, sphacelus*. The part dies, becomes cold, loses its circulation and sensation, and, when external, it becomes mottled, purplish, green, or black, decomposes, vesications appear filled with dark liquids, and air is extricated. If there is much fluid in the part, there may be tension; but usually it is flaccid and boggy; it emits a cadaverous smell. Internal parts are often, when mortified, yellow, or of the color of the parts from which they have imbibed fluids. Mortification sometimes spreads and gets confounded with living and inflamed parts. In more favorable cases the dead part is separated from the living by a barrier of lymph, and amputated by a furrow of ulceration, lymph plugging up the divided vessels. Mortification is frequent in areolar tissue, in mucous and sub-mucous tissues of the alimentary canal, in the throat, in the glandular parts of the intestines in fever; but not in the other mucous systems, nor

in the substance of the lungs, nor in serous and fibrous tissues. It is common in bones, producing *exfoliation*, when slight and superficial; *necrosis*, when the entire shaft of a bone dies.

Besides intense inflammation, mortification is also promoted by weakness of the circulation in the inflamed part, or in the system at large; as in the bed sores of fever in palsied and dropsical patients. These sloughing sores are probably promoted by unhealthy blood. Inflammation of the stomach and intestines is strongly disposed to run into gangrene. Other causes than inflammation produce mortification, such as cutting off the supply of arterial blood, as in *gangrena senilis*, or preventing the return of venous blood. The continued use of diseased grain, especially spurred rye, also produces chronic and dry gangrene.

CONSTITUTIONAL SYMPTOMS.—These are all-important in detecting and treating internal inflammation. The most noted of these is pyrexia, *inflammatory fever*, which is denoted by debility and chilliness, followed by, or alternating with, increased heat of skin, frequent, forcible, and often *hard* pulse, with deranged functions, commonly with headache, confusion of thought, languor, thirst, loss of appetite, and a furred or white tongue. The chilliness marks the *date* of the febrile disturbance. Rigors more commonly attend the commencement of spontaneous inflammation, than of that caused by external injury. Inflammatory fever is perhaps owing to the circulation of altered blood through the body. Generally, the febrile state follows the local inflammation, but sometimes it precedes it, as in erysipelas and the febrile exanthemata, &c.; sometimes the two are simultaneous. Inflammatory fever is not always proportioned in violence to the size or importance of the part inflamed. It commonly runs higher in the young, plethoric, and those of sanguine temperament. It may be modified by the part; witness the depressing effect upon the action of the heart, produced by inflammation of the stomach and bowels and some other abdominal parts, the amount of reaction being lessened, or its duration abridged, the quality of the pulse, especially, being affected, and there being a strong tendency to death by asthenia. Previous habits modify the character of inflammatory fever. In the habitually intemperate, and in those subject to long-continued nervous excitement, the fever is of the typhoid form from the beginning; the febrile reaction being weakened, and the functions of animal life more deeply involved. Stupor and delirium are apt to occur, with extreme debility and irregular movements of the voluntary muscles. These symptoms are more conspicuous in some cases of inflamed veins, and in inflammation from animal poisons. The inflammatory fever may continue a few days after the local signs have disappeared, especially in irritable persons. These cases should be carefully watched and protected from relapse. Sometimes the local changes continue, or even increase for a time after the abatement of the febrile symptoms. Still this augurs well.

HECTIC FEVER.—The commencement of suppuration is often marked by rigors; its continuance, by *hectic fever*. Rigors are by no means necessarily connected with suppuration, for they usher in most forms of fever. Sometimes there is one fit, sometimes many; usually they recur irregularly, sometimes periodically. The symptoms of hectic fever often creep on insidiously, there being a slight emaciation, a pulse a little quicker than ordinary, with a small increase of heat, especially after meals. The patient feels chilly towards night, then the skin gets hot and dry, especially in the palms of the hands and soles of the feet, and the pulse more frequent and less *hard*, and in the middle of the night or towards morning, perspiration, often profuse, breaks out, but with no relief. The paroxysms are irregular, sometimes two or three or more in twenty-four hours. Any of the three

phenomena of the series may be wanting. During the fever chilliness sometimes returns; or, after the perspiration, all the signs of fever. In hectic fever the appetite returns, thirst abates, the tongue, instead of being white, becomes clean and moist, and, towards the end, very red, or speckled with aphthæ; there is no headache or confusion of thought. The face is usually pale, but, during the exacerbation, flushed and often with the red spot on the cheek; the skin, when not perspiring, is harsh and scurfy, branny scales may be rubbed off; the finger-nails become adunque, the sclerotic pearly white, and œdema of the ankles comes on finally.

Hectic may occur independently of suppuration, as in mothers suckling too much, in newly-married husbands, &c.; and when there is a drain on the body.

In mortification, as an event of inflammation, the fever is apt to assume the typhus-like form, to be characterized by a sinking pulse, shrunken features, cold and clammy skin, dry and black tongue, low muttering delirium or stupor, tremors of the voluntary muscles with spasmodic startings of their tendons, involuntary stools and urine. This is owing likely to animal poison in the blood: this poison may have come from the mortified part, or may have existed previously and helped to cause the mortification. The typhus-like symptoms are no necessary or constant concomitant of mortification. In typhus the tendency is to death by coma; in gangrene, by asthenia. Sometimes, when mortification of internal parts takes place, the pain suddenly ceases.

INFLAMMATION OF DIFFERENT TISSUES.—Diffused inflammation of the areolar tissue, accompanied by sloughing, is called *diffused inflammation of the cellular membrane*; if the skin is also implicated, it is called *erysipelas phlegmonoides*. This often comes from animal poisons, and inflammation of veins and absorbents. The larger glands and solid viscera are affected similarly to areolar tissue. Acute inflammation tends to form abscesses. Abscesses and gangrene are rare in the lungs; the last is unknown in the liver and very rare in the kidney. In the kidney, pus often follows inflammation. Inflammation of the viscera is generally attended with little pain. Areolar tissue in all parts is rendered thick and hardy by *chronic* inflammation. Inflammation of *serous* membrane is characterized by sharp, severe pain, *hard* pulse, buffy blood, a tendency to spread, by the effusion of serous fluid and coagulable lymph, and sometimes, in violent inflammation, or when air is admitted, by the effusion of pus. *Adhesive* inflammation belongs especially to this tissue. Ulceration and mortification, commencing in this tissue, are very uncommon. *Chronic* inflammation of serous surfaces thickens, hardens, and puckers them. Synovial membrane is strongly analogous to serous, but it is less *liable* to inflammation, and rarely throws out lymph. Joints are ankylosed, not by agglutination, but by granulations arising on their ulcerated surfaces. Pus seldom forms in synovial sacs, unless air be admitted. Inflammation of the synovial membrane speedily leads to serous effusion.

Superficial inflammation of the *skin* is denoted often by a diffused, red blush, which disappears on pressure, and terminating by resolution, is followed by desquination: this is *erythema*. The inflammation when more intense causes serous effusion and vesication, or purulent effusion.

Mucous membranes are indisposed to adhesive inflammation, though they sometimes pour out an adventitious membrane like, but which is not, coagulable lymph. This membrane is soft, never organized, and appears to be inspissated mucus, altered and containing much albumen. Mucous membranes pour out serous fluid, or viscid mucus, or pus, or blood. Inflammation of these membranes sometimes spreads, sometimes is confined to one place, and tends to penetrate the subjacent parts and cause ulcers

and sloughing. The spreading kind is oftenest met with in the air passages; the other in the alimentary canal. There are less pain, less fever, less tendency to buffy coat in inflammation of mucous than of serous surfaces, unless at the openings, as the mouth, rectum, &c.

Muscular tissue is not inclined to inflame, but when it does it is apt to lose its contractile properties. Its vessels seldom pour out any of the products of inflammation; when these are present, they are likely the products of the areolar tissue.

Arteries seldom suppurate or mortify; they do not readily inflame, and when they do, lymph and stagnation of the blood are the consequences.

The *veins* often inflame and become entirely or partially blocked up, giving rise to new symptoms. The part from which the venous trunk receives its tributary branches becomes dropsical, as in *phlegmosia dolens*. Suppuration may result and pus be deposited in different parts of the body; causing great constitutional disturbances and like fever of a typhus type.

The membranes of the brain often inflame; and its substance also. The ordinary events of the latter are softening and suppuration, sometimes in abscesses, sometimes diffused. Mortification is rare in nervous matter.

LECTURE XII.

KINDS OF INFLAMMATION.—*Acute* or *active* inflammation and *chronic* or *passive* do not differ in kind, but only in degree. The former runs its course rapidly and is attended with much general and local disturbance; the latter runs its course slowly and is attended with less violent, local, and constitutional symptoms. The former is more influenced by medicine; the latter is obstinate and tends to thicken and indurate in the *interior* of organs, but to effuse pus on membranes and surfaces.

Sub-acute inflammation lies between the acute and chronic. Chronic is often dangerous.

Acute inflammation may subside into chronic, and chronic may rise into acute.

Latent inflammation is that which runs its course unperceived, being often masked by other disorders, or by a dull and languid condition of the vital powers; as in the aged, intemperate, &c.

Specific inflammation is that produced by specific poison, as in small pox, measles, &c.; it never, or almost never, recurs, but *common* inflammation does.

Scrofulous or *strumous* inflammation is slow and chronic, attended with little pain, or heat, or, for a time, change of color; the redness, when any, is often livid or purplish. Suppuration at length occurs and lasts long; but the pus is not homogeneous or smooth, but thin, serous, whey-like, with curd-like fragments. The ulcers are indolent. This inflammation is generally little influenced by remedies.

TUBERCLES.—These belong to scrofula; they are unorganized matter of various shapes and sizes, which may soften and suppurate, the pus having the characters of scrofulous pus. Tubercular matter is deposited from the blood, whether as a foreign matter or a mal-elaboration of it is uncertain. If it is fluid at first, the watery part is absorbed and there remains a pale yellow, or yellowish grey, opaque, unorganized substance. Its *shape* depends on the part it occupies. Its favorite seat is the *free sur-*

face of mucous membrane, but it is often also found on serous surfaces. It grows larger by accretion. No alteration takes place in tubercles except through the agency of parts in contact with them, so that when they become crowded, as in the lungs, they, by pressure, cause inflammation of the intervening areolar and other tissues, which suppurate and thus soften and break down the tubercular matter. There are often found among the tubercles, grey semi-transparent corpuscles. The tubercular matter may soften and be expelled, or it may become hard, cretaceous matter, as sometimes happens in *tabes mesenterica*, and the patient get well.

In childhood and youth the lymphatic glands, especially the mesenteric and cervical, are very prone to scrofulous inflammation. In adults, tubercles are most frequent in the lungs, especially in the superior and posterior parts of the upper lobe; here also they begin to suppurate.

When scrofulous ulceration occurs in the larynx and trachea, it is usually the concomitant of the lung affection. Tubercular disease is very common in the digestive organs, in the mucous follicles of the small intestines and coecum. Tubercles are very seldom found in the adult liver, oftener in that of children. They are also found oftener in the spleen of children than in that of adults. They are likewise found in the uterine, testicle, prostate gland, on the surface of the peritoneum, in the nervous system, especially the brain, in bones, especially the bodies of the vertebrae, and spongy extremities of long bones. They generally occur in more than one organ at a time. They are rare in the organs of circulation. They are not always or necessarily preceded by inflammation. Tubercles, by pressure, and probably by other ways, cause inflammation; and inflammation often determines the development of tubercles. In the strumous, *common* inflammation may take on the scrofulous form, become chronic, suppurate tardily and produce unhealthy pus.

SCROFULOUS DIATHESIS.—This is denoted during childhood by a pale and pasty complexion, large head, narrow chest, protuberant belly, soft and flabby muscles, and languid circulation. It very often exists in the sanguine temperament, and is indicated by light, or red hair, grey or blue eyes, large and sluggish pupils, long, silky lashes, fair, transparent skin and rosy cheeks. Cold changes the red color to purplish or livid; the skin is thin and readily irritated; the sclerotic is often of a pearly lustre, and the extremities are subject to chilblains. Such children are often very clever, quick, susceptible, &c. It is also frequent in the melancholic or bilious temperament, in persons of a dark muddy complexion, harsh skin, and of dull bodily and mental energies. It may occur in others. Other marks of this diathesis are chronic lippitudo, or blear eyes, chronic conjunctivitis with extreme impatience of light, and a tendency to form little pustules at the edge of the cornea, tumid and chapped upper lip, red and swollen columnæ nasi and lower parts of the nostrils, white swelling, rickets, moist eruptions behind the ears, chronic enlargement of the glands of the neck and lupus.

This diathesis is hereditary. The exciting cause is any thing that produces debility; as insufficient nutriment, exposure to wet and cold, impure air, want of exercise, and mental disquietude. Infants at the breast seldom show scrofula. It may be prevented often from becoming developed by moderate exercise in pure air and in open daylight, with good nourishment and clothing, and attention to the bowels.

LECTURE XIII.

CANCERS—TREATMENT OF INFLAMMATION.—Cancers are called *malignant*. They are not changes in the natural texture of the body, but additions to them, assuming usually the shape of tumors, and called cancerous *growths*. Some other tumors, as fatty, fibrous, and osseous, not necessarily implying danger to contiguous parts, or to life, or to the general health, are *innocent*. Those resembling natural textures, as the above, are styled *analogous* or *homologous*, while cancer and tubercle are styled *heterologous*. Cancers are hard or soft. There are three species: *scirrhus*, *encephaloid*, or brain-like, and *colloid* or gum-like. The first is as hard as cartilage and creaks when cutting; the cut surface is white or grey, or bluish white and satiny, with opaque, fibrous intersecting bands, and giving out thin juice on pressure. The second is brain-like, soft, white, opaque, with thin traversing and circumscribing fibrous septa. The third looks like *cells* of greenish-yellow transparent gum or jelly; it is sometimes called *alveolar*. Two or three species may exist in the same or different organs at the same time; they are prone to multiply in various parts, and when one kind is cut out *another* may spring up in its place.

Cancers, commonly during a part at least of their progress, are severely painful, incontrollable, augment sometimes very rapidly, sometimes slowly, eat away parts, break out into foul ulcers, corrupt the blood and destroy life. All parts are subject to cancers, especially the female mammae, uterus, the stomach, liver and testicle. The lymphatics, but especially the blood, carry the germs of cancer to all parts. The primary tumor should be completely extirpated as *early as possible*. Cancer is transferable from one person to another. The chimney-sweeper's cancer, affecting chiefly the scrotum, is produced by long handling common soot.

Mortality from cancer increases as life advances. Women are more subject to it than men. The secondary formations are generally encephaloid; this kind is much more vascular, grows faster and larger than scirrhus, and generally occupies several organs at once; but scirrhus is slow, and sometimes solitary. *Fungus hæmatodes* are ragged red, bleeding growths on ulcerated surfaces of cancers. *Alveolar* cancer occurs principally in the pyloric end of the stomach and in the omentum, sometimes in bones, in the breast and testicles. It is sometimes alone and in one organ only, sometimes it is found with the other species; it is seldom met except in adults.

Treatment of Inflammation.—Obtain resolution if possible; if not, then, in *external* inflammation, good *suppuration* is generally best; and in *internal*, sometimes *suppuration*, sometimes *adhesion*. Remove the cause if possible, and prevent its re-application. Follow the *antiphlogistic regimen*; i. e., avoid all internal, external, or mental stimulants, as animal food, strong drinks, noise, &c. The temperature should be about 62°, the apartment well ventilated, the body should be placed in the best condition for the free circulation of the blood, and the affected organ should be kept quiet. When suppuration or gangrene has supervened, the antiphlogistic regimen must generally be modified or abandoned.

Bleeding is one of the best remedies in inflammation. Phlebotomy, arteriotomy, called *general bleeding*, lessen the force of the heart's action; searification, cupping, leeches, called *local* or *topical*, empty the loaded

capillaries. The general effects of bleeding are proportionate to the quantity of blood drawn in a given time.

Venescction is the most effectual mode of bleeding; especially bleeding from the cephalic or basilic veins at the bend of the arm; but if, from any cause, these are inconvenient, some other vein or artery will do, or cups or leeches may answer. Pyrexia of itself is not a sufficient reason for bleeding. The best warrant for it is a *hard* pulse, whether large or small, slow or frequent. This hard pulse must not be trusted to alone, for it is habitual in some persons, and exists in certain chronic heart diseases and probably in some unnatural state of the circulation. Frequency of pulse is less important than hardness. The inflammatory pulse ranges generally from 90 to 120, or more in the young, the nervous, and those previously suffering chronic and wasting complaints. If the organ inflamed be, or is supposed to be, a vital one, we should, other indications concurring, bleed.

Bleed in the upright position, and as early as possible; bleed freely from a sufficiently large orifice and *pleno rivo*, and produce a decided impression as soon as can be. The bleeding has been carried far enough when the inflammatory fever subsides, or changes its character, when the pulse becomes soft or undergoes some marked change, when symptoms of syncope or of suppuration appear.

When inflammation supervenes on chronic disease, or comes on in idiopathic fever, or when there is specific poison in the body, or when suppuration is certain or probable, bleeding if necessary must be employed cautiously.

The very young, the old, the feeble and cachectic, do not bear well the loss of much blood, but still bleed them carefully in dangerous inflammation.

Note the character of the reigning epidemic, for some require, others do not permit of bleeding. Pain, respiration, stupor and delirium are relieved by bleeding. Bleeding in the upright position causes defective supply of blood to the head and thus favors syncope. Syncope is relieved by a horizontal position. In inflammation more blood must be drawn to produce syncope, than in health. Generally, the amount of bleeding required to cause syncope is in proportion to the exigencies of the case. Whether or not the case is one of inflammation is often settled by observing the quantity of blood which, taken in the upright position, produces incipient syncope. If, at the first bleeding, much blood flowed before syncope threatened, the bleeding will probably require to be early repeated. Generally 16 or 20 to 30 ounces is enough blood to draw. Sometimes two, three, or more such bleedings may be necessary.

Topical bleeding is most appropriate in chronic cases, and when the general bleeding does not relieve the local symptoms, except when further loss of blood would be hazardous. These local bleedings for chronic inflammation usually require to be often repeated. Bleed topically as near the inflamed part as possible; over the temples, or behind the ears, or just below the occiput in inflammation of the head; over the chest and precordia, when the lungs or heart are affected; over the abdomen when the liver, or stomach, or intestines are inflamed.

General and local bleeding combined are often highly useful. Blood-letting must be proportioned to the rate of progress and duration of the disease; that is, in chronic cases, use bleeding chronically. Bleeding may be demanded though the pulse be small, as, often, in inflammation in the abdomen. If, in this case, the pulse expands and rises, an impression has been made on the system and the bleeding must be stopped, or death by syncope may result. Repeat if necessary.

Distant topical bleeding, (*revulsion*,) especially from veins returning to

the inflamed part, does good. Arteriotomy is difficult to manage, and aneurismal tumors may result from it. Opening the external jugular vein is very hazardous, for air may get into the heart and cause death; besides it is often very difficult to manage, and any compression, necessary to stop the bleeding, might injure the cerebral circulation.

Which has the most effect in restraining inflammation, arteriotomy or phlebotomy, is uncertain.

LECTURE XIV.

INFLAMMATION—*Continued.*—TREATMENT—*Continued.*—*Purging.*—In acute cases purge actively. It frees the stomach and intestines of irritating matters, fæces, &c., and depletes by causing serous discharges. Purging is particularly good in inflammation, internal or external, of the head. It is also beneficial in inflammation within the thorax, but less so than in that in the head. It is beneficial in inflamed liver. Inflamed stomachs or bowels should be simply unloaded and then left alone.

Mercury is next to bleeding, and better than purging, especially in acute, phlegmonous, adhesive inflammation. In health it causes increased watery evacuations from the bowels, or increased flow of bile, or of saliva. It seems to cure by *equalizing* the circulation, thus relieving congested parts. If pushed in health, it produces inflammation, the gums becoming tender, red and swollen, at length ulcerating, and sometimes, especially in children, the cheeks, throat and fauces sloughing. This inflammation is superficial, spreading, erysipelatous, and, in the enlarging ulcers, absorption predominates, and the patient gets thin and emaciated. Mercury, as an auxiliary to bleeding, when bleeding is indicated, but not as a substitute for it, is the remedy for stopping, controlling or entirely preventing the effusion of coagulable lymph, for *bridling adhesive inflammation*. But it will likely be hurtful, when, in any disease, the morbid action approximates to its own; as in erysipelatous inflammation, disposed to gangrene; in scrofulous diseases, in inflammatory complaints, with general debility and an irritable nervous condition, or a manifest tendency to take on the typhus-like form. In acute inflammation, after bleeding, bring the system as speedily as possible under the influence of mercury. When this specific influence has been obtained, the gums grow red, spongy and sore, there is a metallic copper taste in the mouth, and an unpleasant fætor from the breath. This effect is best obtained by mercury, in equal and repeated doses by the mouth; as calomel, grs., 2 to 3, every four or six hours for about thirty-six or forty-eight hours. If this purges and thus the specific effect is postponed, combine opium, as gr. $\frac{1}{4}$, to calomel, grs. 2, or gr. $\frac{1}{2}$, with grs. 3 to 4. A speedier effect is obtained by larger doses, as grs. 5 to 10, every three or even two hours; or mercurial inunction may be combined. Blue pill or *hydrargyrum cum cretâ*, in larger doses, is sometimes preferable; or calomel and blue pill combined. Previous bleeding renders the body more susceptible of the influence of mercury. In some persons mercury is unmanageable, in others, inert. To ease the distress of salivation, alum gargles, or gargles of chloride of soda, or a dilute solution of chlorine in water, or open air, or sulphur or iodine are recommended. If there be much external swelling, eight or ten leeches may be applied beneath the edge of the jaw-bones, and a soft poultice wrapped round the neck, into which the leech bites may bleed. Pure tannin, moistened and smeared on the spongy gums, is good. One part

of brandy to four or five of water, as a gargle, often helps the saliva and the sore gums.

In *chronic* inflammation, mercury must be introduced slowly into the system, and when the specific influence is obtained, it must be kept up for a considerable length of time. In serofulous diathesis, if mercury is necessary, use it, but very carefully.

Antimony, another very valuable remedy, subdues the action of the heart and arteries, and produces nausea, paleness and sinking of the pulse, and often great relief to the local symptoms. Repeated bleeding may permanently and dangerously debilitate the patient, but antimony is not followed by such weakness. Antimony is peculiarly beneficial in inflammation of the mucous membrane of the air-passages. It is often useful when mercury is not. The best form in which to use it is that of freshly dissolved tartar emetic. The antimonial powder is of very uncertain strength, and antimonial wine contains too much spirit to be used freely. After two or three doses, *tolerance* (as far as the vomiting and purging are concerned) of antimony is usually established, when the same quantity is persevered with. To obtain its full influence in a short time, dissolve gr. i of tartar emetic in $\frac{3}{4}$ ii of hot water, and give one-fourth every half hour. Pause when paleness and sickness come on, but repeat it when inflammatory symptoms appear. If it purge too much, add a few drops of laudanum. *Digitalis*, though it retards the circulation, is not to be depended upon in *acute* inflammation, for it acts at uncertain periods, and, if used in large doses, it may produce deadly faintness, syncope and even death. *Colchicum* is very good in some kinds of *specific* inflammation, but less so in the *common* kind. *Opium* allays the nervous irritability, which arises from bleeding, and thus prevents the rekindling of the inflammation; it is best adapted to nervous patients, and to cases of much local pain. In cranial and pectoral inflammation, or when there is a tendency to death by coma, or apnea, it is *very ticklish*, for it is hard to say how much of the stupor is produced by the disease, or how much by the drug. It should not be used if any duskiness of the face, or purplishness of the red lip, exists. Opium is most serviceable in tendency to death by *asthenia*; as after bleeding, in peritonitis and enteritis.

LOCAL TREATMENT.—*Cold* applications are very useful, especially in inflammation within the cranium, often allaying delirium. If the patient like them continue them, if not stop them. Cold applications to the *chest* and *abdomen* are perhaps injurious. *External warmth*, *hot fomentation*, is very good in some internal inflammations, especially of the abdominal organs; it determines to the surface, promotes perspiration, mitigates pain, and encourages sleep. In *external* inflammation, sometimes cold, sometimes warm applications do good; consult the sensation of the patient. In erysipelas use *warm* fomentation. Warm fomentations often forward suppuration and sometimes resolution.

COUNTER IRRITATION, by blisters, sinapisms, irritating ointments, setons, issues, or moxas, is often very beneficial, especially in chronic inflammation, towards the decline of acute, and more particularly in serofulous affections. In the height of inflammatory fever it is not admissible, nor in *local* inflammation should it be used *very* near the part. Blisters upon the head or neck, in the early stage of acute inflammation in the cranium, are not proper, though on the lower extremities they may do good. Blisters may with benefit be applied to the chest in thoracic inflammation and to the belly in abdominal.

LECTURE XV.

CAPILLARY HEMORRHAGE.—This is the most common kind. In nine cases out of ten, if there be any rupture at all, it is of the capillaries only. Rupture of arteries or veins is rare, except in cerebral hemorrhage, when it is common. It is likely that the blood oozes out through the apertures, through which the natural fluids of the parts are poured, for often a flow of mucus precedes hemorrhage from mucous membranes.

Habitual hemorrhages are those which recur again and again, commonly at regular intervals, without any noticeable detriment to the health, or any obvious cause, but which depend on some necessity of the system. They occur most usually in the rectum and nares, but also in the lungs, stomach, and skin, and are often hereditary. They resemble the catamenia in the time of life they come on and disappear, in their being often periodic, continuing on each occasion for the same length of time, with the same loss of blood, and being preceded by general indisposition, and often some fever. Their interruption, or *metastasis* to other parts, is generally from derangement of the health; when profuse they become diseases. They are *vicarious* of each other and of the catamenia.

IDIOPATHIC HEMORRHAGE.—*Idiopathic* hemorrhage is that which is not habitual, nor connected with any appreciable previous local disease. It is *active* or *passive*. Active is preceded by active congestion; passive, often, by no apparent congestion. The latter may depend on some change, very likely on rupture of, or debility in, the vessels or apertures of exhalation; or perhaps more likely on some alteration in the consistence or composition of the blood itself. In the first case, astringents are the remedies; in the latter, reparation of the blood. Active hemorrhage occurs principally in the young and robust, and those having a tendency to plethora. Sometimes it is caused by heat, strong mental emotions, or violent bodily effort; oftener there is no apparent cause.

SYMPTOMS OF HEMORRHAGE.—The symptoms which often usher in hemorrhage are a general indisposition, wandering and obscure pains, which settle in the future seat of the hemorrhage; a sensation of weight or tension, or heat and tingling; sometimes slight redness and turgescence and fulness of the larger veins of the part; paleness, chilliness, and shrinkings of distant parts, especially the feet and hands; followed often by general increase of heat and a frequent, full, and bounding pulse, (*hemorrhagic* pulse.) The blood commonly escapes rapidly, and from a single organ, is florid, and readily coagulates. The hemorrhage is followed by the disappearance of all the symptoms. *Passive* hemorrhage occurs in the feeble and in those debilitated by disease, fatigue, &c.; in it there generally are no precursory symptoms nor any reaction; the effused blood is dark, serous, indisposed to coagulate, and often poured from several parts at once, causing, if at all considerable, a pale face and loss of heat.

Symptomatic hemorrhage is that which is the result of previous disease in the part itself, or in other parts functionally connected with it. It is preceded by congestion, sometimes active, but generally mechanical, and especially of the veins. Thus we have hemorrhage from the bronchi in consequence of crude tubercles filling up a part of the lungs and obstructing the circulation. In the same manner does disease of the heart cause hemorrhage of the lungs, and disease of the liver hemorrhage of the stomach and bowels.

SEAT OF THE HEMORRHAGE.—The mucous membrane is the most subject

to hemorrhage, giving rise to *epistaxis*; *hæmoptysis*, *hæmatemesis*, *melæna*, *hæmorrhoids*, *hæmaturia*, *menorrhagia*. Capillary hemorrhage occurs more rarely from serous membranes, and from the skin. Hemorrhage into serous sacs is, in most cases, an effect of inflammation or of the opening of a considerable vessel. Hemorrhage from the nose is most common in children; that from the lungs and bronchi, in youth; that from the rectum, uterus, and urinary organs, in the middle and decline of life. Hemorrhage often occurs from laying open larger vessels, as by ulceration, &c. In the brain, blood sometimes oozes from the capillaries of the brain or its *membranes*, but generally from the giving way of a diseased *artery*.

The importance of the hemorrhage depends on the organ, the amount poured out, the time the bleeding continues, the pressure of the extravasated blood on internal parts, &c. Fatal hemorrhage may occur and yet no blood reach the outside, or, if reaching the outside, it may be doubtful whence it comes. It is generally more fluid and brighter the greater in quantity and the nearer the surface it is effused; but more in clots and darker the smaller in quantity and the longer it takes to reach the surface. *Indirect symptoms of Internal Hemorrhage* are, paleness of face, feebleness of pulse, coldness of extremities, and tendency to syncope; alarm at the sight of the blood may occasionally produce these symptoms.

TREATMENT.—Habitual hemorrhages should be let alone if they do not injure the health, or the structure or functions of the part. If they go by metastasis to more important organs, *recall* them if possible, for these changes are seldom *for the better*. Habitual hemorrhages, as hæmorrhoids in plethoric persons, are often safety-valves and should not be stopped. But get rid of the *plethora and piles*, lest metastasis to the head cause apoplexy, or cerebral hemorrhage; besides, the piles may bleed excessively, or, by exercise, inflame. In *active idiopathic* hemorrhages, unless there be danger from too great loss of blood, seldom use *direct* means to stop the bleeding, for they generally cure themselves. In these cases the treatment of inflammation may be requisite. With these exceptions, use both direct and indirect measures to arrest the hemorrhage as speedily as may be.

Follow the antiphlogistic regimen; as cool air; absolute quiet, mental and bodily; the avoidance of any thing that hastens the circulation, as stimulating food, drink, &c.; placing in that position which protects the part most from the afflux of blood. Bleeding, purging, and mercury in inward bleeding to slightly pytalize are remedies. Next to venesection and mercury come *astringents*, especially *cold*. Apply the cold to the bleeding surface by iced or cold drinks or enemata, or otherwise; or apply it as near, on the outside, to the organ affected as possible; as to the chest, to the epigastrium, to the perineum, &c. Cold often acts on distant parts by shrinking them.

INTERNAL REMEDIES.—Acetate of lead, and many vegetable remedies, which seem to owe their astringency to gallic acid, as rhatany root, uva ursi, bistort, tormentil, pomegranate, kino, catechu, preparations of gall nuts and the nostrum Ruspini's styptic. It is better, in appropriate cases, to give the gallic acid itself. Some recommend nitre in large doses, mineral acids, muriated tincture of iron, alum, oil of turpentine, secale cornutum, matico leaf, &c.

LECTURE XVI.

DROPSIES.—These are collections of serous liquid in one or more shut cavities of the body, or in the areolar tissue, or both, independent of inflammation. These are rather symptoms of, than real, diseases, but must often be treated as if real diseases. In dropsy depending on organic disease, there are two sets of symptoms, one depending on the primary disease, which is often permanent, the other on the collected fluid, which is often got rid of. Dropsy *itself* is often curable; so also is, sometimes, the cause. Dropsy of the ventricles of the brain is called *hydrocephalus*; of the pleuræ, *hydrothorax*; of the pericardium, *hydropericardium*; of the cavity of the peritoneum, *ascites*; there are also *œdema*, *anasarca*, and *general dropsy*, this last being *anasarca* with dropsy of one or more serous cavities. Dropsies are caused by an augmented exhalation, or defective absorption, or both, of the serous fluid which naturally moistens all parts. It is probable that the lymphatics take up and carry effete matter into the blood and out of the body, and that the veins absorb the serous fluid. The entrance of fluid into partially filled veins, or the exit of it from full ones, depends on the physical principles of *endosmose* or *exosmose*.

CHRONIC AND ACUTE DROPSIES, PATHOLOGY, CAUSES, &c.—*Chronic*, or *passive*, or *cardiac dropsy* is occasioned by defective absorption; this defect is caused partly and chiefly, and sometimes entirely, by an unduly loaded state of the veins, which depends almost always on some impediment to the return of the blood to the heart. The larger the vein and the nearer to the heart is the impediment, the more extensive will be the dropsy. Obstacles situated anywhere in the right or left side of the heart, or in the lungs, may produce secondary changes in the parts behind them. Passive dropsy is especially associated with disease; primary or secondary of the right heart.

When a vein has been obliterated and no dropsy resulted, the vein was not a principal one of the part, or dropsy did exist at some time, or the collateral circulation prevented dropsy. *Anasarca* may occur without any obliteration of veins, or organic disease in the heart. A weak, debilitated state of that involuntary muscle, the heart, may cause it, by not being able to propel the blood, which is thus retarded in the veins; as in chlorotic girls, &c. Steel, good food, opened bowels and cold shower-baths in the morning, cure these, but bleeding makes them worse.

Cardiac dropsies are those that have their origin in the heart; *renal*, those depending on disease of the kidney.

Active, or *acute dropsy* depends on excessive exhalation, probably through the arteries or the capillaries near the arteries, and comes on suddenly, and sometimes can scarcely be distinguished from inflammation with serous effusion.

Between the surfaces of the shut cavities, the lungs, bowels, kidneys, and skin, there exists a compensating relation, by which, when any of them pours out more or less liquid than usual, some other one pours out an inverse quantity. Should this compensating process fail, dropsy of some kind is apt to arise. Watery collections sometimes disappear suddenly from one part and rapidly appear elsewhere. If the fluid is discharged from a free surface we have a flux. Intercepted perspiration tends strongly to escape from free surfaces.

Active dropsies are said to belong to the left side of the heart; passive, to the right. The water of dropsy is liable to change its location, subject to

the force of gravity, and collects most where the areolar tissue is loose and plentiful, as in the eyelids, scrotum, &c.

Active dropsies may sometimes be inflammatory, and may be so considered if any pus, or flakes of lymph, or if the ordinary symptoms of internal inflammation, exist.

Active dropsy, with much disturbance of the whole system, might be called *febrile*.

Prognosis.—Anasarca, or chlorosis, is the least perilous and the most hopeful. Febrile or active dropsies are more obedient to treatment and oftener entirely curable than chronic. Local dropsies are hopeful if the impediment which causes them can be removed or a compensatory circulation be established. In chronic cases, cardiac dropsies are more readily dispersed for a time, but sooner return than renal.

The immediate danger from the collected fluid depends on its location.

Treatment.—1. Get rid of the accumulated fluid. 2. Prevent its return; in other words remedy the diseased condition which caused the dropsy. In active or febrile anasarca venesection often draws off the fluid, by relieving congestion, diminishing the heart's action and promoting absorption. But as it also diminishes the fibrin and red particles of the blood, and makes it more watery, and weakens the heart, it should be used cautiously. The fluid may sometimes be got rid of through the alimentary canal, or kidneys, or skin. In chronic dropsies alleviate symptoms and trust to time.

Paracentesis, Acupuncture.—See Lecture LXVII.

LECTURE XVII.

OPHTHALMIA is inflammation of the eye *generally*. The mild form of inflammation of the conjunctiva and meibomian follicles is caused by vicissitudes of temperature, or certain conditions, or sudden variations, of the atmosphere, especially by cold, and is called catarrhal ophthalmia.

SYMPTOMS OF CATARRHAL OPHTHALMIA.—The leading symptoms are, *redness*, some *pain* and uneasiness in the eye, and increased *discharge*, and a *sticking together of the eye-lashes and lids*.

The redness is *superficial*, *bright*, *scarlet* and usually *irregular* or in *patches*.

In intense inflammation the whole surface, except the cornea, is scarlet red. The vessels are large, tortuous, and anastomosed into a network, which can be moved about by the finger. Extravasated blood in this network is called "blood shot," or *ecchymosis*. The conjunctiva of the lids is first inflamed, and afterwards that of the eyeballs. In *scleritis* the redness being seen *through* the conjunctiva, is *pink*, sometimes slightly *violet*, the vessels are *small* and *fine*, like hairs, and straight and point to the cornea, like radii, and cannot be moved by the finger.

The pain in catarrhal ophthalmia is slight. At first there is intolerance of light; but not when the disease is fully developed. There is a sensation of stiffness and dryness, as of some foreign substance, as sand, between the globe and lids. In *scleritis* the pain is more severe, of a dull aching kind with a feeling of tightness, the sclerotic being denser than the conjunctiva; it is also often throbbing and felt in the brow, temples and head; it increases in violence from evening till after midnight, and then abates and is nearly absent during the day. This is *rheumatic* ophthalmia, and is produced by the same causes as catarrhal.

The discharge from the eye in eatarrrhal ophthalmia is not *generally* abundant; it is altered mucus, at first thin, then thick and often puriform, sometimes transparent, and viscid and gummy. The little swelling, which sometimes exists, is caused by the serous fluid under the conjunctiva.

Inflammation of the mucous membrane only, under favorable circumstances, runs a certain course and subsides; but otherwise it may continue troublesome for weeks and injure the cornea.

TREATMENT OF CATARRHAL OPHTHALMIA.—Antiphlogistic regimen; avoid drafts of air, and exposure to cold and moisture. Active and general remedies are seldom necessary. In the outset purge with calomel and jalap, or calomel followed by a black dose, (infus. sennæ.) If the system sympathize with the local disease and the inflammation is severe, or if the disease was mismanaged or neglected, it may be necessary to bleed from the arm, or apply leeches.

Purge well once or twice, and give moderate sudorifics, as warm diluent drinks; Dover's powder grs. v, and warm foot-baths at bedtime; and, during the day, saline draughts, containing liq. ammonia acet. 3 ii-iii.

Local stimulating or astringent applications are the best remedies; as distilled water $\frac{3}{4}$ i, with argenti nitras grs. iv; put a large drop in the eye once, twice or three times per day; there is smarting pain at-first, followed in ten or twenty minutes by much ease of the sensation of sand in the eye, and abatement of the inflammation. Continue this as often as the symptoms return. Aetas plumbi and zinei sulphas are also used in eclyria, but are much inferior to argenti nitras. Prevent the gluing of the lids, by smearing them at bedtime with any mild ointment, as spermaceti ointment or lard.

PURULENT OPHTHALMIA.—This is another disease of the conjunctiva, so called from the profuse discharge of altered mucus, which cannot be distinguished from pus, and which runs over and excoriates the cheek. It differs *greatly* from eatarrrhal ophthalmia in the degree of the inflammation and symptoms, in the danger to the sight, and in the exciting causes.

VARIETIES OF PURULENT OPHTHALMIA.—There are three varieties: 1, purulent ophthalmia of adults, or Egyptian ophthalmia, or contagious; 2, gonorrheal; 3, that of newly-born children. The two first are so essentially the same, in adults, in symptoms, course, and consequence, that one description will answer both.

PURULENT OPHTHALMIA OF ADULTS, EGYPTIAN, CONTAGIOUS GONORRHEAL OPHTHALMIA.—The effusion beneath the conjunctiva bulges it out around the cornea like a ring, burying the cornea; or it pushes the livid red eyelids forward and hides the eye entirely, the upper lid becoming hard and stiff and completely overhanging the lower. This pale red swelling with sometimes patches of extravasated blood, is called *chemosis*. If the inflammation is confined to the lining of the lids, it is not dangerous, but it is prone to extend to the whole anterior surface and produce ulceration and sloughing of the cornea. Often, interstitial deposits between the laminae of the cornea destroy vision. The conjunctiva, lining the lids, is often left chronically inflamed, thick, granular, hard, thus perpetually irritating the cornea and causing haziness, opacity, with some vascularity of it.

If the inflammation penetrate to the deep-seated textures, there is much pain, which is pulsating, circumorbital, sometimes sharp and lancinating, sometimes dull and aching, sometimes intermittent, or, if constant, paroxysms come on at night and abate towards morning. This circumorbital pain is characteristic of inflammation of the sclerotica, cornea, choroid and iris. It is when the pain is severe, throbbing and paroxysmal

that the cornea generally gives way. The giving way is sometimes followed by relief to the pain, and sometimes it is not. There is seldom much intolerance of light.

When the local symptoms increase in severity, the constitution sympathizes, the pulse becomes frequent, the tongue white, but there is seldom much fever or thirst, and generally the blood is not buffy. Children suffer more constitutional disturbance than adults. Purulent ophthalmia is contagious, and, for a short distance, likely infectious, even though originally it might have arisen from some ordinary cause and independent of contagion.

LECTURE XVIII.

PURULENT OPHTHALMIA—Continued.—*Gonorrhœal* is severer than Egyptian ophthalmia, and runs a more rapid course. It is said, that in the latter the lids are the parts first inflamed; but in the former the whole conjunctiva; in the former, also, one eye only is generally affected. These and the history of the case may help the diagnosis.

Purulent ophthalmia is produced by contact of the gonorrhœal matter of the urethra with the eye. Whether or not it occurs by metastasis is uncertain. It does not, most likely, supervene as a part of gonorrhœa, independent of inoculation and metastasis.

TREATMENT OF PURULENT, EGYPTIAN, GONORRHEAL OPHTHALMIA.—Bleeding *early and freely* from the arm in the upright position till fainting is about to ensue, or the pulse begins to falter, may, in the young and robust, help the local remedies in Egyptian ophthalmia. Bleeding is also indicated by the throbbing, circumorbital and nocturnal pain. Bleeding, however, is not always satisfactory, on account of the inflamed part being a *mucous* membrane, and there being *so little* constitutional sympathy. When the patient rallies from the faintness produced by the general bleeding, twelve to twenty-four leeches *around* the eye, not upon the tumid lids, often do good.

Local stimulants and astringents are generally best. Some use *undiluted liquor plumbi acetatis*; some introduce a very minute quantity of the oil of turpentine between the lids. The nitrate of silver solution, grs. iv to $\frac{3}{4}$ i of distilled water, is much the best. Increase the strength of this solution in proportion to the intensity of the disorder. A very good plan is: wash away any discharge with a solution of alum, (3 i, to water, O i,) then insert beneath the lids the ten grain ointment, (nitrate of silver, in impalpable powder grs. x to $\frac{3}{4}$ i of hog's lard,) and move them freely; or turn them out and rub on the ointment—if this does good the su face will turn white. The pain, caused by this application, and which lasts for a half hour, or an hour, or more, may be relieved by warm narcotic fomentations, and pain may be allayed and sleep obtained by opium. A mild ointment applied at night to the edges of the lids prevents their sticking. The next morning clean out the eye again, and again apply the ointment. Clean out the eyes occasionally.

Mercury is useless or mischievous, for the disease is too rapid, and, besides, it is not adapted to this kind of inflammation.

Scarification is preferable to non-scarification of the conjunctiva in chemosis, for it lets out the fluid, which, by pressure, injures the cornea, even to sloughing.

Blisters on the nape of the necks, temples, or behind the ears during

the active stage, are of no use, but in the more advanced and chronic periods they are.

In gonorrhœal ophthalmia no benefit is obtained by reproducing the urethral discharge; in fact it is generally not suppressed.

Purges are proper and necessary.

PURULENT OPHTHALMIA OF NEWLY-BORN CHILDREN, NEONATORUM.—This is very common, very serious if neglected, but very easily managed if treated in time.

Symptoms.—It comes on usually about the third day, but sometimes later, and is at first confined to the conjunctiva of the lids, but afterwards extends to the eyeball; there is intolerance of light; at length the lids swell, sometimes enormously, and a copious discharge of pus takes place, which is often hot; the mucous surface of the lids is often villous and shaggy and bright scarlet; and at last the cornea may slough, or become opaque or protrude, (staphyloma,) or the iris may prolapse, or the coats of the organ may shrink. So long as the *transparent* parts are *uninjured*, which is sometimes for eight or ten days, the eye, with proper treatment, is safe.

Causes.—The disease generally results from inoculation by the unhealthy fluids of the mother, whilst the child is being born, and is itself highly contagious. It is also probably brought on by bad management, by cold air, by hot, bright fires, by soap, and such irritants.

TREATMENT OF OPHTHALMIA NEONATORUM.—In severe cases, if the lids be very much swelled and red externally, place a leech (in this case) upon the centre of the tumid upper lid, and watch its effect, as the bleeding may be hard to stop, or it may be sometimes too much for the infant. Empty the bowels with a little castor oil, and apply to the inflamed eye a lotion of plumbi acetatis grs. ii to water $\frac{3}{4}$ i. In less severe cases, keep the bowels open with magnesia, apply a little lard along the edges of the lids, and inject carefully into the eye a solution of alum, grs. iv to water $\frac{3}{4}$ i. If the eye become insensible to the alum, use a solution of nitrate of silver, grs. i to iv in water $\frac{3}{4}$ i.

PUSTULAR, OR PHLYCTENULAR, OR STRUMOUS OPHTHALMIA.—This is a disorder of children, occurring between the time of weaning and the eighth year, but sometimes much later. Sore eyes in children at the breast are, in nineteen-twentieths of the cases, purulent, but after weaning, strumous.

SYMPTOMS OF PUSTULAR OPHTHALMIA.—The leading symptoms are slight and partial redness, sometimes confined to the lining of the lids, great intolerance of light, little prominences or pustules on the conjunctiva, sometimes on the cornea, but generally at the junction of the sclerotic and cornea. Sometimes one eye only is affected; oftener both, and then generally one worse than the other. In scrofulous children, catarrhal ophthalmia is apt to become strumous. A few vessels, collected into bundles, evidently superficial, often prominent, proceed from the circumference of the eye, especially the angles to the edge of the cornea, and sometimes encroach on it. At the end of these vessels are situated the pustules. These may be absorbed and leave a temporary white spot, or they may form little ulcers, which, if on the cornea, may penetrate it, and letting out the aqueous humor, cause prolapsus, iridis, &c.; or they may heal and leave a permanent white, opaque speck (leucoma) which interferes with vision.

Intolerance of light is sometimes the only symptom noticeable, and being a peculiar expression of countenance, which, when once seen, is easily recognized afterwards.

Often, the profuse discharge of scalding tears inflames and excoriates the skin and causes pustules which produce a discharge that crusts over

the cheek, forehead, &c. This is *crusta lactea* or *parrigo larvalis*, and is very characteristic of the scrofulous habit; it occasionally spreads over the whole body. Though there is extreme intolerance of light (called *photophobia scrofulosa*) the retina is not inflamed, nor in danger.

Other evidences of scrofulous disease usually accompany the ophthalmia, and sometimes alternate in severity with it, getting better as they get worse, and *vice versa*. These evidences are swelled and red *alæ nasi* and upper lip; enlarged cervical glands; eruptions on the head; sore ears; a large and hard belly; disordered bowels; offensive breath; grinding of the teeth; and general debility.

LECTURE XIX.

STRUMOUS OPHTHALMIA—Continued.—*Pannus*, which sometimes exists in strumous ophthalmia, is a patchy and vascular condition of the corneal surface, formed by anastomosing vessels. Strumous ophthalmia is very obstinate, and, as long as the scrofulous habit exists, very apt to recur during the period already mentioned.

TREATMENT OF STRUMOUS OPHTHALMIA.—This should be general. Correct the unnatural condition of the digestive organs by purging at the outset, and occasionally, by a mercurial purge, and regulate them afterwards by laxatives, as rhubarb, or *confectio sennæ*, or castor oil. Order warm clothing, frequent ablution of the body, nourishing but plain food, pure air, *change* of air, and regular exercise. Administer tonics, as the preparations of iron, or the dilute mineral acids; the best tonic is *sulphas quinineæ*. To a child give grain doses, three times a day, dissolved in water, with a drop of dilute sulphuric acid, and some syrup of orange-peel. Leeches round the eye are seldom requisite, except when there are more pain and redness than common, and white tongue and hot skin. Intolerance of light is no fit indication for the use of leeches, for abstraction of blood rather aggravates that symptom.

Warm fomentations are agreeable, and, when the system is somewhat rectified, local stimulants and astringents do good; as *vinum opii*, and the lunar caustic solution: this last, if long and repeatedly used, is apt to stain the conjunctiva of an indelible olive color. These two preparations diminish the irritability of the eye and promote the healing of the ulcers. The red precipitate ointment, and the citrine ointment, diluted, are beneficial.

Counter irritation is very useful; as blisters behind the ear, or at the back of the neck, or issues in the arms, or a ring of silk in the pierced lobe of the ear; a strong thread, smeared with *emplastrum cantharidis*, and firmly tied behind the ear at the angle of reflection, causes vesication.

Ulcers on the cornea may be checked by being touched, once in two or three days, with a sharp-pointed piece of lunar caustic. When the hot tears have ceased, get rid of the *crusta lactea* by a light poultice or warm water, and then from time to time bathe the part with a lotion of zinci oxyde $\frac{3}{i}$ and water, or rose water $\frac{3}{iv}$.

IRITIS.—The lining membrane of the anterior chambers of the eye is a shut serous sac, and inflammation of it is of the adhesive kind. The inflammation is sometimes confined to the iris, sometimes it is not.

Symptoms.—The *objective* symptoms of iritis are redness of the sclerotic; deposition of lymph; change of color, of brilliancy and appearance of the iris from the presence of lymph; irregularity and sometimes immobility of

the pupil from adhesion to neighboring parts. The *subjective* symptoms are impaired sight pain in and around the eye.

The redness of iritis is the same as that of scleritis, and the fine hair-like vessels dip down at or about the edge of the cornea and go to the iris. The vascular zone becomes fainter from before backwards. Sometimes the red, inflamed vessels of the conjunctiva confuse the redness of iritis. The zone continues and disappears with the inflammation. The lymph is visible on the iris, resembling rust spots, or yellowish, or reddish brown drops towards the pupillary edge. Suppuration sometimes takes place in violent cases. Vision is always impaired, partly because the posterior tunics are perhaps implicated, partly because lymph fills the pupil more or less or prevents the iris from moving freely, and partly because the cornea is hazy. There are intolerance of light, and pain in the eyeball, in the brow and temples, most severe at night. The pain is sometimes constant and severe, with nocturnal paroxysms, but occasionally very trifling. In most cases, particularly acute cases, there are much fever and headache, a full and hard pulse, and white tongue. If the inflammation reaches the retina, blindness usually results, and the pain and fever increase.

Pure iritis is always manageable.

Treatment.—Antiphlogistic regimen; purgatives; bleeding, local and general—these are useful, but they do not cure iritis. The intensity of the local symptoms, especially the pain, the degree of the fever, the hardness of the pulse, and the strength of the patient, offer the best measure of the necessity of the bleeding, and of its amount. Venesection till some decided impression is made on the circulation, enpping from the temples, or both together or in succession, may often be required. Active purgatives should be exhibited.

Mercury is the remedy; use it, after such bleeding as may be necessary, to affect the gums as soon as possible, as calomel grs. ii, iii, or iv, with opium gr. $\frac{1}{4}$, $\frac{1}{3}$ or $\frac{1}{2}$, given every four, or six, or eight hours; or calomel gr. i with opium gr. $\frac{1}{10}$ or $\frac{1}{8}$ every hour. Equal doses at equal intervals. If necessary, the mercurial friction may be added or used alone, or hydrargyrum cum creta in doses of grs. v to x. It removes the lymph and all unfavorable symptoms, unless the lymph has become organized, or has glued the parts together; even in cases of some standing it does good.

Belladonna should be used at the same time with mercury; its benefit consists in its power of dilating the pupil and thus preventing adhesion, or of stretching and breaking already existing adhesions; Henbane, stramonium and cherry laurel also possess this virtue. When the eye is painful or much inflamed, smear the surrounding skin with the extract of belladonna, made semi-fluid with water, and wash off after an hour; but for dilating the pupil it is better to drop two or three drops of the solution (ext. \mathcal{O} i to distilled water \mathcal{Z} i, filtered through linen) into the eye. In slow cases keep up the influence of mercury till the redness, lymph, &c., disappear; this may take a month or two.

Nocturnal pains round and over the eye may be eased by rubbing well into the temples, before the pain comes on, an ointment of grs. x of strong mercurial ointment, and grs. ii of opium.

Causes.—Surgical operations may cause violent iritis; straining the eye, &c., often bring on iritis insidiously and slowly, and cause injury to the retina. In this last case mercury, gradually introduced into the system, often does good.

Iritis is often combined with syphilis or rheumatism. It is one of the earliest, and sometimes the only secondary symptom of syphilis. The pain

of syphilitic iritis is severe and chiefly nocturnal. This form of iritis cannot well be distinguished from other acute forms of iritis, from mere inspection. It is never attended with abscess of the iris and hypopyon, the lymph is usually deposited in *distinct masses*, the pupil becomes angular, often towards the nose; these, and the periodic nightly pain, and the existence of other secondary syphilitic symptoms, as eruption, nodes, pain in the limbs and ulceration of the throat, and the information obtained from the patient, show the iritis to be syphilitic.

Syphilis in childhood very seldom affects the iris. Mercury is very beneficial in syphilitic iritis. It never *causes* it.

LECTURE XX.

ARTHRITIC, OR RHEUMATIC IRITIS.—This is associated with gout or rheumatism; like them it is apt to return again and again, and this returning makes it dangerous. Lymph is poured out at each attack, thus contracting and sometimes plugging up the pupil. Ten or more attacks may occur before any injury results to the vision.

SYMPTOMS OF ARTHRITIC IRITIS AND RHEUMATIC OPHTHALMIA.—These are some of the local symptoms characteristic of arthritic iritis; the lymph is seldom deposited in *distinct masses*; the contracted pupil keeps its central position; the adhesions of lymph are whiter than usual; the zone of vessels is somewhat livid, or slightly purplish, with a perfect or sometimes partial ring of white between them and the cornea; the larger conjunctival vessels, at the back of the eye, are apt to be tortuous and varicose. Rheumatic iritis is often combined with rheumatic ophthalmia. Rheumatic ophthalmia is inflammation of the fibrous coat of the eye, the sclerotic. The local symptoms of it are not, generally, violent, and seldom lead to permanent alteration of structure. It is associated with rheumatism; there is some intolerance of light; the sclerotic is livid, red, mottled, dull, dirty looking; the vessels are partially distended and terminate short of the cornea, leaving a white ring round it.

TREATMENT OF SIMPLE RHEUMATIC OPHTHALMIA.—Moderate topical bleeding and counter irritation; improve the health by change of air; try the remedies for rheumatism, as colchicum, bark, sarsaparilla, iodide of potassium. When the conjunctiva also is implicated it is called *catarrho-rheumatic ophthalmia*.

Arthritic iritis almost always occurs in asthenic forms of gout and rheumatism, when repeated attacks have produced mental depression, indigestion, languor, and in those of intemperate habits. Dr. Mackenzie generally met with the disease in those over fifty, very often in tobacco smokers and whisky drinkers, who have often suffered rheumatism, who are teased by headache, acidity of the stomach, bad gums and teeth, and lowness of spirits.

TREATMENT OF RHEUMATIC IRITIS.—Free bleeding, or mercury to salivate is injurious. If there be any fever, and a hard pulse, a white tongue, bleed and purge; then give ℞ to 3 ss of the wine of colchicum, two or three times a day. When the symptoms are less active, correct the digestive organs and the bad habits of the patient; give small doses of mercury (as grs. v of Plummer's pill) three or four times a week; excite counter irritation by blisters, or croton oil liniment. After bleeding or leeching, and regulation of the bowels, give tonics, as iron, sulphate quinae. In iritis, especially syphilitic, when mercury is forbidden, *oil of turpentine*, in drachm

doses three times a day, often dispels pain, redness, &c., and causes lymph to be absorbed and restores vision. It is necessary to its beneficial action that the bowels should not be confined.

AMAUROSIS (*αμαρως*, dark, obscure) is imperfect vision, from defective nervous function. *Gutta serena* is total blindness. Amaurosis is an obscure disease; the defect may lie in the brain, or optic nerve, or retina. The functions of the retina may probably be impaired by disturbance of the circulation. Over-use of the eye, or intense light, may cause congestion, or chronic inflammation of the retina, *retinitis*.

Symptoms.—Amaurotic persons have a peculiar gait and expression of countenance; there is uncertainty in their movements, their eyes are wide open, and they stare at vacancy. In incomplete amaurosis, the iris is sluggish and the pupil large; in total blindness the pupil is generally much dilated and the iris perfectly immovable. Sometimes, however, the iris is as active as ever, especially if one eye only is affected. Sometimes the pupil of the amaurotic eye acts when exposed to light in union with the sound eye, but not by itself; that is, the *associated* action is natural, but the *independent* is lost. When both eyes are affected, or the independent action of the amaurotic one is unimpaired, the cause of the disease is probably situated in the cranium. The third nerve may move the iris when the vision is lost. In amaurosis which comes on slowly, particularly when it depends on chronic inflammation and congestion of the internal tunics of the eye, there are symptoms, which mark its approach; as a feeling of stiffness and fulness of the eye; sometimes pain around it; an appearance of fog before the eyes, which by daylight is dull and murky, by dark shining and fiery, a halo of prismatic colors, seen around the flame of a candle, an apparent diminution of the *size* of objects; ocular spectra; *museæ volitantes*; these last may exist without any danger of amaurosis. The *museæ* which are motionless or move with the eye denote danger to vision. Those which sink gently downward when the eye is fixed are innocent.

The *treatment* in this kind of amaurosis is bleeding, general or topical, according to the amount of pain and fever, the fulness of the system, and according as the amaurosis is more or less recent; above all, mercury to ptyalize, rapidly in acute cases, but slowly in chronic cases; purgatives, counter irritation, and repose of the eye. When amaurosis results from brain disease (as when there is hydrocephalus) or from apoplexy, treat these causes. A few cases of amaurosis may probably be caused by a deficient supply of blood to the retina, produced by, sometimes, perhaps, a long-continued drain on the system, as in nurses, &c. Tonics, good diet, &c., are the treatment. In obscure cases, when the seat of the defect is not certain, try the mercurial plan. When all else fails, *electricity*, applied by taking small sparks from the lids and around the orbit, may do good, by rousing the energy of the nerves, especially in amaurosis from lightning; but it should never be used in inflammatory action, and seldom in recent cases.

Strychnia, by stimulating the atonic nerve, sometimes does good, if there be no inflammatory action. Use it, *not* by the *mouth*, but *locally*, especially over the supra-orbital nerve, thus: take off the cuticle above the eyebrow, by a small blister, dry up the oozing serum, sprinkle on gr. $\frac{1}{6}$ of strychnia, finely powdered, and cover with linen, smeared with unguentum ectacci. Repeat every twenty-four hours, cautiously increasing the dose till the vision improves, or some evidence of the action of the strychnia is shown.

Causes.—Worms in the alimentary canal, teething, probably, by irritating the facial branch of the fifth nerve, dental irritation in adults, hysterics, certain poisons, suppression of certain natural evacuations, as perspiration, menses, &c., and the repulsion of certain eruptions, may cause temporary amaurosis.

LECTURE XXI.

DISEASES OF THE BRAIN AND NERVOUS SYSTEM.—*Physiology, &c.*—No alterations that are visible after death in the brain, or spinal marrow, afford any explanation of the interruption of their proper functions, which are *sensation, thought and motion*. It is often impossible to say what parts of the nervous matter govern particular functions. The same symptoms often accompany different or opposite alterations of the brain, or the same alterations of the brain are associated with different symptoms, and often nervous diseases exist without any appreciable change of structure. Disorder of the nervous functions may result from disease in the nervous matter itself, or from sympathy with disease of other parts.

Of the office and disorders of the sympathetic nerve and its branches little is known. In the gray part of the nervous centres are situated and generated the nervous powers, but the white or fibrous parts conduct the nervous influence; this influence consists in, or is closely connected with, some modification of electricity.

To the cerebrum, and probably to it alone, belong sensation, thought and volition; motor power resides in the spinal cord; but what is the precise office of the cerebellum is unsettled.

The change in the spinal cord, which produces action of the voluntary muscles, may originate in the brain, by volition, or emotion, and be sent through the spinal cord to the muscles; or this change may originate in the cord itself from chemical, or other agencies, independent of the brain; or it may arise from the extremities of internal or external (*afferent, incident, excitor*) nerves, and be carried by them to the spinal cord, and thence be conducted to the muscles through other (*efferent, reflex, motor*) nerves. This apparatus is called the *excitor motory system*.

Though there may be no appreciable deviation from the natural condition of the nervous centres, still there must be some physical, but perhaps, fugitive condition which disturbs, or abolishes the functions. Too much pressure, as in coma, or too little, as in syncope, a varying state of the cerebral circulation, as an altered ratio of the arterial and venous blood, may disturb the functions of the brain.

It has been proved that the blood in the head is affected by posture, or gravitation; moreover it has been proved that the amount of blood within the head, instead of being always about the same, is often greatly augmented, or diminished.

LECTURE XXII.

DISEASES OF THE BRAIN—*Continued.*—*Symptoms.*—In disease *sensation* may be morbidly keen, as in tenderness, pain, irritability, intolerance of light, or of noise, &c.; or morbidly obtuse, as in numbness and *anæsthesia*, defect or loss of hearing, seeing, smell or taste, &c.; or perverted, as in giddiness, nausea, ringing in the ears, ocular spectra, itching, dread, false smells, high or low spirits, &c.

The faculty of *thought* may be disturbed, as in the different degrees of delirium, confusion of intellect, stupor, coma, &c. *Voluntary motion* may be deranged, as in twitching of muscles, spasms, palsy, &c.

The *diagnosis* of brain affections is often difficult and uncertain. Inflammation of the cerebral substance alone, happens oftener than that of the membranes alone. Inflammation of the pia mater probably always extends to the convolutions which it invests, thus deranging the cerebral functions. The dura mater or arachnoid may be inflamed without implicating the pia mater; but inflammation of the dura, or pia mater most likely affects also the arachnoid.

Inflammation of the dura mater, or of the dura mater and arachnoid, as a result of external injury, is common.

The following are the phenomena and consequences: A man gets a blow on the head which stuns him perhaps at first, but after some days of apparent health he complains, has pain in the head, is restless, cannot sleep, has a frequent and hard pulse, a hot and dry skin, flushed countenance, red and ferrety eyes; rigors, nausea, and vomiting supervene; and finally delirium, convulsions, or coma. Meanwhile the part struck becomes puffy, tumid and tender; the pericranium beneath this part is separated from the bone; the bone itself is whiter and dryer than natural; and the dura mater is detached from the cranium and smeared with lymph or puriform matter. The effused pus and lymph, by pressure, may produce stupor and palsy.

INFLAMMATION OF THE DURA MATER.—Symptoms.—Simple and idiopathic inflammation of the dura mater is very rare; its symptoms are generally, pain in the head, fever and rigors, which intermit, sometimes so regularly as to be mistaken for ague; the intellectual faculties, especially at the outset, are but little affected.

Inflammation of the dura mater as a secondary affection is very common, very fatal, and little within the reach of remedies. It often results from otitis. The symptoms are, severe headache, and ear-ache, generally a gush of matter at length from the ear, with the continuance or increase of the pain; shivering; dulness and drowsiness, slight delirium perhaps; and gradually stupor. Oftener these symptoms supervene on a *chronic* purulent discharge from the ear. This affection is more common in scrofulous persons than in any other, and oftener occurs as a sequel of scarlet fever than in any other way, the inflammation of the throat creeping along the Eustachian tube into the ear; that part of the temporal bone containing the organ of hearing becomes carious, the membrane tympani perforated, the little bones of the ear come away, more or less deafness ensues, occasionally, and sometimes habitually, pus is discharged; at length the dura mater or lateral sinus may be implicated.

Treatment.—Apply leeches early and repeatedly to the mastoid process, especially if tender, and use counter-irritation afterwards.

If symptoms of acute inflammation in the head supervene, the active treatment to be hereafter mentioned in inflammation of the other cerebral membranes should be adopted.

Prognosis of inflammation of dura mater in these cases is very unfavorable.

SYPHILITIC INFLAMMATION OF THE DURA MATER.—As a secondary effect of syphilis there may be nodes on the inside of the cranium as well as outside; and they may cause pain in the head, convulsions, paralysis or coma.

Treatment.—Not less than grs. v of iodide of potassium, thrice daily, should be prescribed at first, if necessary it may be carried to grs. x or xv. It should be gradually withdrawn some time after the external nodes, or the symptoms of the presumed internal ones, have departed.

ARACHNITIS.—Inflammation may sometimes extend to the dura mater from the arachnoid bone, or orbit. Active *arachnitis*, that is, inflammation of the arachnoid *only*, is rare. By *meningitis* is meant, by many, inflammation of the pia mater and arachnoid. As a certain amount of fluid in the

meshes of the pia mater belongs to the state of health, its presence does not always denote inflammation, unless other symptoms and traces of it are found, or have existed; as false membrane, or coagulable lymph between the arachnoid and pia mater. This lymph is derived mainly from the pia mater, which is highly vascular, which the arachnoid is not. Inflammation of these two membranes (taken together) is marked by no fixed, or uniform symptoms. The most constant and striking is a sudden and long-continued paroxysm of *general convulsions*, which sometimes are the first thing noticed, but which sometimes are preceded by a few days of discomfort, slight headache and vomiting. The convulsions recur and at length end in coma. Sometimes the first attack of convulsions is preceded by violent and sudden pain in the head and attended with screaming. Some mention *delirium* as a symptom.

LECTURE XXIII.

PHRENETIS OR ENCEPHALITIS, or general inflammation of the brain and its membranes, in adults, is divided into two periods, the first of *excitement*, the other of *collapse*.

Symptoms and Modes of Attack.—The symptoms of these two are sometimes somewhat confounded. The symptoms of excitement are pain of the head, often intense and deep-seated, or extending over a large part; a sense of constriction across the forehead; throbbing of the temporal arteries; flushing of the face; infected and wild and brilliant look of the eye; contraction of the pupils; preternatural sensibility to external impressions, as sound, light, &c.; violent delirium; want of sleep; paroxysms of general convulsions; parched and dry skin; a frequent and hard pulse; great and rapid fluctuation in its frequency; white tongue; thirst; nausea and vomiting; constipation of the bowels. In every case all the symptoms do not exist, nor do they always come on in any regular order. Encephalitis generally comes on in three or four ways: 1. There may be some complaining about the head, followed all at once by furious delirium and fever. 2. The first thing noticed may be nausea and vomiting, temporary or lasting several days, or during the whole disease. Whatever is swallowed is vomited. Bitter, yellow or green fluid, containing much bile, is brought up; the bile resulting not from any injury in the liver, but from the inverted action of the duodenum. There is much constipation. 3. A paroxysm of general convulsions sometimes ushers in encephalitis. In the first of these three probably both the substance and membranes are simultaneously inflamed; in the second the substance of the brain is likely the first part affected; in the third the pia mater and arachnoid. Sometimes encephalitis begins in some irregular and obscure manner, as by a sudden loss of speech, &c.

Symptoms of Collapse.—The symptoms of acute inflammation continue from twelve hours to two or more days, when the symptoms of *collapse* come on; these last likely result from the events and products of the inflammation. The headache ceases; wild delirium is succeeded by indistinct muttering and a state of stupor, from which it is difficult at first, and impossible at length, to rouse the patient; vision and hearing from being painfully acute, become dull and perverted; strabismus and double vision are common; the contracted pupil becomes oscillating, then widely dilated, and finally motionless; violent convulsions are succeeded by twitching of the muscles, starting of the tendons, and tremors, or palsy of some of the limbs; the countenance is ghastly and cadaverous; cold sweats break out;

the sphincters relax; finally profound coma and death follow. When the disease proves fatal, it does so sometimes in twelve to twenty-four hours. Sometimes it lasts for two or three weeks.

Anatomical Characters.—After death are found various conditions, as serous or puriform effusion into the ventricles of the brain or the meshes of the pia mater; layers of coagulable lymph between the pia mater and arachnoid; softening of the cerebral substance, with pus in it; or great vascularity, as shown by the pink or purplish cut surface.

Treatment.—This should be *early*. Rigidly observe the antiphlogistic regimen; have perfect silence and a darkened room; keep the head high and on a firm pillow.

The remedies are, bleeding, purging, and cold to the head. Bleed as in Lecture XIII., and after the patient rallies a little, cup or leech him on the back of the neck, or temples, or mastoid processes. Repeat or not according to symptoms.

Cold to the head is to be used as an auxiliary to bleeding or cupping. Shave the head and apply iced water, as by putting some pounded ice and water in a bladder and applying it like a cap. This calms the agitation and delirium, brings on sleep, and restores the senses. Or pour a slender stream of cold water on the top of the head and watch the effect. Or let the water drip constantly. Repeat or not according to circumstances.

Purge hard. Overcome the strong tendency to obstinate constipation by purging freely and frequently; give calomel, grs. v, with jalap, grs. xv, and in three or four hours give a strong black dose; afterwards, give calomel, grs. iii or iv, every four hours, and a black dose at least every morning, until the symptoms give way. If the mercury affect the gums, so much the better; but do not combine opium, for it shuts up the bowels and tends to bring on coma. Croton oil is a good purgative.

When collapse comes on, bleeding may do good if it has not yet been employed, or if already employed it may be repeated, if the pulse continue hard.

A relapse is more dangerous than the first attack. Avoid it by avoiding every thing which can disturb the brain, as animal food, &c.

Blisters during the period of excitement are injurious, especially if put on the head. As revulsions on the feet or legs they may do good, but mustard poultices, or hot water fomentations are better. In coma, or when the violent symptoms of excitement are past, blisters are good to the nape of the neck, or behind the ears, or to the head itself.

The symptoms of collapse, or sinking, mark a fearful, but not necessarily hopeless condition; for they do not always proceed from fatal disorganization of the brain, but sometimes from simple exhaustion of the nervous powers. Cautiously try stimulants and restoratives, as ammonia, Hoffman's anodyne, beef tea, wine, and perhaps well-timed opiates. If the brain be fatally injured this treatment can do no harm. If the tendency be to death by *coma*, the prospect is very discouraging; if by *asthenia*, there is some hope. Pallor, or feeble and flying pulse, extreme debility and tremors, coldness of the extremities, a want of power to respond to external impressions—these are alarming but not absolutely desperate, especially if the mental faculties remain. But profound stupor, partial palsy, profuse sweats, are of the worst omen; still, try blistering the head and internal stimuli. In all cases of coma and insensibility, especially of paralysis, examine the bladder often, and empty it with the catheter if necessary. Watch the patient at all times closely.

DELIRIUM TREMENS.—This is *not* essentially inflammatory. The treatment of encephalitis, therefore, especially bleeding, is injurious. Bleeding may sometimes bring on delirium tremens. See the next Lecture.

LECTURE XXIV.

DELIRIUM TREMENS—Continued.—Symptoms.—The strong features of this are sleeplessness; a busy, but not angry or violent delirium; constant chattering; trembling most always and fidgety employment of the hands; tremors, often of the limbs; moist and creamy tongue; soft, but frequent pulse; perspiring skin; most frequently a drenching sweat of, perhaps, an offensive smell; face pale, sometimes red, and eyes sometimes red; the patient does as desired, such as putting out his tongue, &c.; is at one time attentive to what is passing around him and then wanders to imaginary scenes; is anxious, suspicious, and fears imaginary enemies, and thinks that rats, &c., are running about him; wants to get out of bed, but is easily induced to stop in it; very seldom harms himself or others. During the approach of the malady, he is impatient of advice, or interference in his duties, which he discharges bunglingly.

Causes.—Habitual use of strong drinks, and sometimes the deprivation of them; great care, or anxiety, or excitement; suspension of the habitual use of opium, probably. It follows bodily injury and surgical operations, more from the treatment than from any thing else; it also follows in the course of certain diseases, as apoplexy, sometimes. In these cases it is more apt to occur in the old, and in the young, if intemperate. An unusually severe debauch may bring it on. It is rare among women, and more common in summer than in winter. The essence of delirium tremens is nervous irritation.

Treatment.—Procure sleep; for if the patient does not sleep for many nights he will die. Opium is the remedy; give it in full doses, and repeat it fearlessly if the desired effect does not follow. First clear out the bowels by a moderate purge, then give grs. iii of solid opium, and, if the patient does not sleep after two or three hours, give one grain every hour till he does. Or give equivalent quantities of the acetate or muriate of morphia, or of laudanum, or of the black drop, or of Battley's sedative liquor. Meanwhile keep the room dark and quiet. If the patient sleep, withhold or continue the remedy in smaller or less frequent doses as required. Opiate enemata do good in traumatic delirium, when the narcotic cannot be taken into the stomach. Sometimes the opium does no good unless given with the accustomed stimulus, gin, &c. If the appetite and digestion be good, nourishing diet, as strong broth, and opium, generally suffice; but otherwise the *habitual* stimulus will be temporarily necessary. After the delirium, cautiously withdraw the stimulus and give beef-tea, &c. After sleep advise beefsteak or mutton chops. Opium and antimony combined are praised by some. Mercury is *not* good, for it irritates the nervous system. Do *not* give digitalis. Do not confine the patient with straps, &c., if possible, for it injures his temper, and his struggles weaken him, but rather employ two or more good-natured nurses.

In mixed cases, which resemble encephalitis and delirium tremens, and in which the indications are equivocal, carefully weigh the symptoms and cautiously *try* the remedies.

In doubtful cases act on the worst supposition, use antiphlogistic remedies cautiously and watch their effect.

Bleed moderately from the arm and notice if the blood has the buffy coat.

Combine calomel or antimony with the opium.

If, after acute inflammation in the cranium, delirium tremens exist, treat for delirium tremens.

Counter irritation, as a blister to the nape of the neck, may do good after the more decided symptoms are gone.

Diagnosis.—The following are the distinguishing symptoms between these two diseases: the *pulse* is hard in the earlier stages of encephalitis, but soft in delirium tremens; the tongue is mostly parched and rough in the former, but moist and creamy in the latter; the *skin* is hot and dry in the first, but covered with sweat in the second; the *countenance* in one case is flushed, but mostly, not always, pale in the other; *tremors* are uncommon in the first period of encephalitis; *headache* is usually absent in delirium tremens; the *delirium* in the two have peculiar characteristics, as already shown.

In the severest cases of delirium tremens, there is a marked diminution of phosphates in the excreted urine, but in acute encephalitis much increase.

Anatomical Characters.—Pure delirium tremens often leaves no trace or morbid appearance whatever in the brain, or its membranes; but sometimes liquid is effused into the ventricles, or meshes of the pia mater, or the arachnoid is thickened, less transparent and sprinkled with little white spots.

The habitual use of ardent spirits leads to chronic inflammation in the blood-vessels, liver, kidneys and arachnoid.

The most constant morbid condition found is a remarkably soft, pale, and flabby state of the muscular tissue of the heart.

PARTIAL AND CHRONIC INFLAMMATION OF THE BRAIN, AS IT OCCURS IN ADULTS.—The whole subject of the connection between symptoms and morbid changes in the brain is full of uncertainty.

Softening or ramollissement, one of these changes, is a diminution of the consistence of the brain, even sometimes to diffuence. The color of the softened part may be natural, or white, or vary from pink to orange, or deep red, or mahogany brown, or pale yellow, and be mixed sometimes with serous fluid; or red spots may be interspersed through it. The softening is usually partial, occurring in any part, but generally in the gray matter of the convolutions, thalami and corpora striata. It may be caused by inflammation, or a defective supply of arterial blood, in consequence of diseased blood-vessels.

Cerebral hemorrhage may cause softening, and softening may cause hemorrhage. Softening caused by obliteration of the arteries is seldom considerable. When the softening extends much beyond the redness, it is likely that the extravasation was caused by the softening; but when the redness and vascularity extend much beyond the softening it is likely that the softening was caused by inflammation. This belief is strengthened when the brain around the soft part is hardened and equally red.

Obliteration of arteries is almost peculiar to old age, but inflammatory softening occurs at any age. Convulsions, or rigidity of muscles, seem to mark the inflammatory stage, and paralysis, the softening, or suppurative stage. Purulent matter, infiltrated into the softened substance, is called *suppuration of the brain*; the above symptoms of convulsions in the earlier stage, and paralysis in the latter, are noticeable.

Partial inflammation of the brain, especially when chronic, may produce *induration*, with often unusual vascularity; or, when there is a greater degree of induration, the hardened part may look like wax, or the white of egg, hard boiled, with little blood. In these cases convulsive movements are common, but paralysis is not. The symptoms may go on for months, remitting often. This state is more likely to be cured than softening.

Tumors, as fibrous, cancerous, &c., and tubercles, are found in and on the brain, giving rise to various symptoms, which, taken alone, do not dis-

close the particular kind of disorder; this must be judged from other circumstances. In the case of specific tumors there is no cure; treat and alleviate the symptoms. When it is not unlikely that inflammation exists, treat for inflammation by local bleeding, counter irritation, and, especially, by mercury to salivate, but used cautiously, as it may occasionally hasten death.

LECTURE XXV.

HYPERTROPHY OF THE BRAIN.—*Symptoms.*—This is an undue and disproportionate development of it. If the brain case is proportionally increased, there may be no morbid phenomena. Sometimes, in fact, the brain and its case are extravagantly developed without there being any disease or symptoms. But if the brain be too large for its case, it is compressed and its convolutions flattened. The brain is firmer and tougher, drier and paler, and contains less red blood than natural. Epileptic fits, or rather, paroxysms of convulsions often exist, sometimes ending in paralysis; the intellectual faculties are sometimes dull, and there is often headache. These symptoms are also common to other cerebral complaints. The diagnosis is conjectural and the treatment uncertain.

ATROPHY OF THE BRAIN is a diminution of its volume, but not of its consistence. It is congenital, or the result of disease in the membranes or arteries of the brain. It may be confined to a few convolutions or to the centre of the organ, as the thalami or corpora striata.

CHRONIC HYDROCEPHALUS, which consists in an unfolding of the convolutions, and a spreading out of the nervous matter by reason of a large collection of fluid in the cavities of the brain, is not properly atrophy. Atrophy gives rise to symptoms, but none characteristic. The intellect may be natural. The whole brain is sometimes atrophied and lies at the bottom of the skull, the remaining part being filled with fluid. The fluid has not compressed the brain to this small state. This condition is accompanied by idiocy.

ACUTE HYDROCEPHALUS, or *inflammation* of the brain, as it occurs in children, especially *scrofulous* ones. The inflammatory character of the disorder is not always very clearly expressed by the symptoms.

Premontory Symptoms.—*Causes.*—There are many symptoms, which come on in various ways. The following usually, but not always, precede the disease: a loss of appetite, or a capricious and voracious appetite; foul tongue; offensive breath; enlarged and sometimes tender belly; torpid bowels and unnatural evacuations, the stools being pale and with little bile, or dark with vitious bile, fetid, sour-smelling, slimy, or scybalous. The child becomes pale, thin, heavy, languid, dejected, fretful, irritable, and is sometimes a little unsteady in his gait. In some very young children there is often an unnatural wakefulness, or restless sleep, attended by grinding of the teeth and moaning. A frequent sudden cry or scream, a clenching of the little fists, and a turning in of the thumb towards the palm of the hand, give warning also of the approaching malady. These, with symptoms of strumous diathesis, or disease, point to probable mischief in the head.

The relation which the derangement of the digestive organs and brain disease bear to each other, as cause and effect, is unknown. Any source of irritation may act as an exciting cause, as surgical operations, falls, injuries of any kind, painful dentition, &c.

The grand predisposing cause is the *scrofulous* diathesis; so that any

thing that aggravates or excites this condition may produce this disease ; therefore are the brain and stomach simultaneously affected.

This disease is hereditary and may occur up to the twelfth or fourteenth year, but rarely after, though it belongs to infancy and childhood.

It may be brought on by the drying up of eruptions, unless free purging be used ; by teething, heating exercise, stuns, severe pain, violent anger, sudden fright, and by terror in the pregnant mother, &c.

Modes of Attack.—There are at least three ways in which the disease may make its attacks. 1. It comes on gradually after the above premonitory symptoms ; besides, the pain of the head, which was previously occasional, gets more frequent and severe, sharp, shooting, and sometimes affects one side more than the other ; the child wakes and shrieks with the pain ; this is very characteristic. As coma comes on, this shrieking gives way to habitual moaning. Very often, at first, there are pain and stiffness of the back of the neck ; sometimes much pain of the limbs, or extreme tenderness of the scalp. The pain of the head becomes complicated with vomiting, both of which are aggravated by motion. Very often nausea is excited by the erect posture ; the child sighs, looks sad, and cannot tolerate strong light ; the pulse becomes rapid, and the abdominal functions more disturbed. This form may last a fortnight, the child getting worse. 2. The disease sets in *suddenly* and violently with acute pain in the head and high fever, or with convulsions ; the face is flushed ; the eyes brilliant ; there are intolerance of light and sound, and pain and tenderness of the belly. This stage resembles an attack of continued fever. 3. It comes on insidiously, with head symptoms after other maladies, as after the disappearance of eruptions on the scalp, after scarlet fever, painful dentition, or other inflammatory or febrile complaints. The early symptoms are often slight, or entirely absent, convulsions or paralysis being the first signs of affection of the brain. This is the most dangerous of the three forms, and it and the first are more common than the second. It is called water stroke.

Stages.—There are three *stages*. **FIRST STAGE.**—*Symptoms.*—The symptoms most constant in the first are severe, shooting pain of the head ; restlessness ; inability to sit up ; disturbed sleep, with grinding of the teeth, from which the child often starts in terror and screaming ; the head is hot externally ; there is intolerance of light and noise ; the pupils are most commonly contracted ; the child dislikes to be disturbed ; there are also vomiting, loss of appetite, white tongue, offensive breath, costive bowels, unnatural, green often, or black, tar-like stools, scanty and high-colored urine, a frequent and sharp pulse. A very characteristic symptom is, that the previously tumid and perhaps tender abdomen sinks and becomes flat without any increased stools. These symptoms sometimes pass rapidly into those of the second stage. They may last for a few hours only, seldom longer than a week. This period answers to that of excitement in encephalitis in adults. **SECOND STAGE.**—The *second* stage answers to collapse in encephalitis. *Symptoms.*—The pulse is irregular, variable, often slow, and easily accelerated ; there are diminution of sensibility, heaviness, stupor, dilated pupil, tolerance of light, imperfect or no vision, squinting, and, while sight remains, double vision ; tolerance of noise ; the child lies on his back in a drowsy state, his eyes half closed, and uttering occasionally cries expressive of pain ; convulsions frequently, but not uniformly, occur ; slight and partial spasmodic twitchings, or general and long-continued convulsions ; paralysis ; sometimes hemiplegia ; the stools and urine pass unconsciously ; sometimes the child picks his lips, or bores his finger into his ears or nose ; vomiting generally ceases. This stage may last a week or two. Often there are remissions, sometimes sudden, sometimes gradual, the child appearing to get well ; but in a day or two he may relapse into a

state of deeper coma than before. These symptoms of improvement may occur more than once. **THIRD STAGE.**—*Symptoms.*—The *third* stage resembles the second, only the pulse becomes very frequent. The child rolls his head perpetually from side to side, moans continually, waves his hands, or hand, one being palsied; there are paralysis sometimes of one side, and convulsive twitchings of the other; the circulation is very unequal, one part being hot and dry, and another covered with a cold sweat; the cheeks are alternately pale and flushed; the child raves or is insensible; the pulse becomes more and more weak, and the child dies. Death often comes on during a strong convulsion. This stage may last only a few hours, or a fortnight.

Diagnosis.—Acute hydrocephalus may be distinguished from the remittent fever of childhood by the following: The vomiting of hydrocephalus is often absent in remittent fever, or if present, it soon ceases, without that abiding nausea which is frequent in hydrocephalus. In remittent fever the bowels are often relaxed from the first, or soon become so, and the stools are usually fecal, watery, and light colored; the stools in hydrocephalus are scanty, dark, or mud-colored. Abdominal tenderness is nearly constant in remittent fever, especially in the iliac regions, and wind can always be felt in the abdomen. The tongue is not moist as in hydrocephalus, and has only a thin coating of yellow fur in the centre and towards the root, while it is very red at the tips and edges and soon becomes dry. In hydrocephalus there is often a great distaste for drink and food, but in remittent fever there is a strong desire for drink, especially for cold drink. The heat of skin in remittent fever is much greater than in hydrocephalus. The pulse in remittent fever is regular and quicker throughout than in hydrocephalus. In remittent fever the child makes few complaints about its head, but delirium occurs early, especially at night; but in hydrocephalus true delirium hardly ever occurs till an advanced period, and is sometimes absent altogether. In remittent fever there are remissions in the morning and exacerbations towards night, but any such fluctuations in hydrocephalus observe no definite period. Remittent fever is rare before three years, while more than half the hydrocephalic cases occur before the age of five.

Anatomical Characters.—After death we find, in some cases, the events of inflammation; the dura mater firmly attached to the skull; sometimes the two surfaces of the arachnoid adhering; frequently, serous fluid in the meshes of the pia mater; often layers of coagulable lymph between the arachnoid and pia mater; red spots in the cut surface, though they may exist in other cases—the nervous matter is said to be softer than natural and infiltrated with fluid. The most common and characteristic change is *softening of the central parts of the brain, with an effusion of serous fluid into the ventricles.* The fluid generally varies from $\frac{3}{4}$ ii-vi. It is clear sometimes, sometimes turbid, or puriform, with floating flocculent shreds, which are lymph, or often with fragments of neighboring parts. Softening of the central white parts may be fatal without any serous effusion.

Besides the brain, other parts may be affected; the liver, enlarged; the peritoneal covering, inflamed; Peyer's glands, much developed; tubercular matter found in the brain, lungs, intestinal mucous follicles, bronchial and mesenteric glands; often intussusception of the small intestines, which probably takes place a little before death, from spasmodic action. Sometimes there is tubercular ulceration of the bowels with, perhaps, diarrhea.

Duration.—Acute hydrocephalus usually continues two or three weeks. It may destroy life in four or five days, or not till the fourth week.

LECTURE XXVI.

ACUTE HYDROCEPHALUS — *Continued.*—This kills more than recover. The chances of curing are better the earlier the disease is detected, and therefore we should act on the worst supposition, especially in scrofulous children. It is not certain that the case is hopeless after effusion has taken place, nor are there any sure signs of effusion having taken place.

Prognosis.—The *prognosis*, always doubtful, is better in violent cases occurring in tolerably healthy subjects, than in slow cases occurring in weak and scrofulous subjects. If the pulse becomes *gradually* less frequent, there is hope that the fever is declining; but if *suddenly*, there is reason to fear that the secondary stage is about being established. A gradual and slight increase in the frequency of the morbidly slow pulse is a good omen; but its rapid acceleration is a bad one. There is always danger as long as there exists any approach to symptoms of effusion, as dilated pupil, or a pupil which does not briskly contract under strong light. The prognosis is especially bad when the disease supervenes on other diseases, or on the chronic form of the disorder. The acute seldom subsides into the chronic form.

In treating this disease, remember that the subjects are children, generally weak and scrofulous children.

Treatment.—If the child is feverish, the pulse sharp, the head hot, the cheeks flushed, pain severe, and if seen early, take blood till some decided impression is made. It is better to apply leeches to the temples or mastoid processes, than to open a vein; because in very young children topical bleeding is tantamount to general bleeding on account of the activity of the capillary circulation. The leeches might be applied to the crown of the head. Apply three leeches to a strong infant of six months, in violent cases. Stop the bleeding if syncope occur. One leech causes the discharge on an average of about one ounce of blood; six ounces from a vein is a full bleeding for a child five or six years old. Very young children often bear well the loss of blood even to fainting once or twice. After the general bleeding apply leeches or not according to the state of the pulse, the pain, fever, strength of the child, &c. Too much bleeding is dangerous. Do not bleed after coma is established or general convulsions occur.

Purge early. Purgatives derive from the head. The best are calomel and jalap, or calomel and scammony; if these do not act freely, give also senna and salts. A previous bleeding often helps an irritable stomach to retain the medicine. When there is much vomiting, a large clyster often settles the stomach and procures stools. A drachm or two of magnesia, saturated with lemon juice, given every two or three hours, often quiets the irritable stomach and procures stools. Dr. West recommends Oss of nitre, with 3i of epsom salts, dissolved in some aromatic water, or in real broth. Calomel and scammony sometimes remain on the stomach when every thing else is rejected. Purge for several days.

Apply cold to the elevated head in the early stage when there is much heat, as by linen kept constantly *wet* with cold water or spirits and water, or drop cold water on the head. *Ice* to the head in very young children is perhaps not good. The cold to the head is assisted, and perhaps rendered safer, by immersing the lower extremities in warm water at the same time. Mercury should be given, but not with the direct object of ptyalizing.

If you desire to take the chance of the specific influence of mercury, give it in equal doses at equal intervals as a part of the purgative plan, without opium, and rub in some mercurial ointment. Green evacuations, like wet tea-leaves or chapped spinach, show the specific influence of mercury in children. It is difficult to salivate children, especially in this disease. Moderate local depletion and the regulated exhibition of mercury in small quantities, afford a better chance than large bleedings and full and frequent doses of calomel. Blisters, in the *second* stage, to the nape of the neck or head, are useful. Several may be applied in succession, or the ulcerated surface may be kept open by irritating ointment; as unguentum cantharidis, or ceratum sabine. When there is much irritability towards the decline of the disease, use opiates, but cautiously; as Dover's powder, grs. ii-iii. Digitalis, colchicum, squills, antimony, may be useful as diuretics.

Prevention.—When there is reason to suspect any tendency to the disease, order nourishing light diet; as well-dressed vegetables, farinaceous substances, and a little animal food; keep the bowels regular, correct any disorder of the digestive organs by antacids, laxatives, change of diet, sometimes by mercurials as hydrargyrum cum creta; advise free, open, mild, dry air. Attend to dentition. An issue or seton in the arm or neck may help to ward off the disease. The mental faculties should not be much taxed by studies, &c.

SPURIOUS HYDROCEPHALUS resembles acute, but differs from it in the cause and the remedies required. The disorder principally depends on exhaustion, as from diarrhea, &c., or loss of blood. The symptoms are heaviness of head, drowsiness, languor, whitish tongue, absence of heat and fever, sometimes a transient flush, pale and cool cheeks, half shut regardless eyes, insensible pupils, interrupted sighing, irregular breathing. The diagnosis is assisted by a knowledge of how the symptoms came on, and of their causes.

Treatment.—Restrain diarrhea, if any; give nourishing diet, especially the mother's milk, or a pint and a half or more of ass's milk a day, (24 hours;) keep the child in the recumbent position; keep the extremities warm with flannel; advise cool air, if seasonable. Give \mathfrak{m} x of the aromatic spirits of ammonia in a small draught every four hours, or occasionally, gutt. v to x of brandy, mixed in arrow root, may be substituted: keep this up for two or three days, then give the ammonia at longer intervals and continue the ass's milk, for it purges.

If there be plethora, or inflammation, or an approach to it, the surface of the fontanelle is convex and the case may be benefited by depletion; but when there are emptiness and want of support, the fontanelle is concave and the case requires better diet, ammonia, &c.

CHRONIC HYDROCEPHALUS is a dropsy within the skull, generally in the ventricles of the brain. This may occur during intra-uterine life, or after birth. The liquid pushes the os frontis forward at the upper part, and does the same with the other bones, so that the head becomes long, broad, deep, and flattened on top; or sometimes it becomes conical, sugar-loaf like, or wholly irregular. The bones of the face do not proportionally increase, so that the forehead is broad and the face tapers to the chin, is triangular. This shape of the face is diagnostic.

The brain is sometimes deficient in some parts, or entirely wanting, the cranial cavity being filled with fluid. Often there are other marks of imperfect development; as hare-lip, a bifid spine, or fissured palate. These are hopeless. The liquid in the ventricles may push out and unfold the convolutions, or it may fill the cavity while the brain lies at the base of the skull. In this disease the head augments in various degrees; the *cerebral*

functions are deranged; the child is top-heavy; deafness or blindness comes on; one or more limbs are palsied; or the child is idiotic. The greater number die, or recover during infancy. A few reach old age and have a tolerable intellect and senses. Pressure from the accumulated water produces coma, convulsions, or idiocy. If the yielding bone case permits the accumulation without much pressure, the cerebral functions suffer but little. When the fontanelles and sutures close, there is peril; sometimes they re-open.

Occasionally this complaint comes on long after the skull is perfectly ossified. The bone case cannot expand, and, as in childhood, the cerebral functions are deranged, and coma or convulsions terminate life.

Chronic hydrocephalus is not always hopeless.

LECTURE XXVII.

TREATMENT OF CHRONIC HYDROCEPHALUS.—This consists in internal and external, or mechanical remedies. The internal ones are diuretics, purgatives and, above all, mercury to promote absorption. With these, abstraction of small quantities of blood from the head, by leeches, is beneficial. Gölis' treatment is, give calomel in half-grain doses twice a day; but if that purge too much, give one-fourth grain doses. At the same time rub a scruple or two of mercurial ointment, mixed with ointment of juniper berries, on the scalp every night. Keep the head covered always with a woollen cap. Give infants breast milk, but to older patients a small quantity of meat. Keep in the open air in good weather. This plan in two or more months often restores the mental and bodily powers. If no improvement follows in two months, use diuretics with the former remedies; acetate of potash or squills, or both. Put an issue in the neck or in each arm, and keep them open for several months. Assist convalescence by quina, as gr. $\frac{1}{4}$ three times a day.

Another plan which has been found successful is, to give as a dose every eight hours grs. x of erude mercury, rubbed down with about \mathfrak{z} i of manna and grs. v of *fresh* squills. This causes great reduction of strength and flesh, and operates on the kidneys, but does not ptyalize. Continue till the symptoms abate and then lessen the dose. Then Griffiths' mixture \mathfrak{z} iss three times a day, or steel, will restore strength.

The *mechanical* remedies are *bandaging* and *puncturing* before the bones of the skull unite. Moderate and well-regulated bandaging is of much benefit when the disease is stationary, the bones loose and floating, and the child pale and languid. This, with regulating the bowels, often dispels all bad symptoms. But when the head is enlarging, bandaging may be injurious.

Puncturing or tapping the brain affords a means of getting rid of the fluid, when it continues to accumulate and cause pressure, the brain case not being able to expand. It is attended with the danger of hastening death; but it also affords *some* chance of a perfect cure. Do not tap till other means have failed: then introduce a *small* trocar perpendicularly to the surface at the edge of the anterior fontanelle, so as to avoid the longitudinal sinus and the larger vessels emptying into it; let the fluid issue very slowly, and then only a part at once. When the pulse becomes weak, or the dilated pupil contracts, or the countenance alters, withdraw the canula and close the aperture. Gentle compression helps somewhat to compensate for the lost fluid. The horizontal position and a few drops

of sal volatile, or brandy in water, restores the pale and faint child. The slight inflammatory action, if any, which sometimes comes on a day or two after the tapping, may be treated by cold lotion, leeches and other inflammatory remedies.

Compression and paracentesis are opposite measures, adapted to different conditions, and therefore require accurate judgment in their use. If the walls of the head be tight and firm, the trocar should precede the bandage; if lax and movable use compression gradually and cautiously, and then puncture, if need be.

INFLAMMATION OF THE SPINAL CORD.—*Physiology, Pathology.*—The spinal cord (including the medulla oblongata) being the seat of the reflex functions, any injury, mechanical or otherwise, which disorganizes or destroys the continuity of it, completely abolishes sensation and voluntary motion in all parts *beyond* the injury.

If, therefore, the whole thickness of the cord is injured in the very upper part, above the origin of the phrenic nerves, the respiratory muscles cease acting and produce suffocation at once; if a segment, even small, is injured between the origin of the phrenic and intercostal nerves, the intercostal muscles cease acting, and the diaphragm only acting, life may continue a few days, but never a month. We find the lungs loaded with frothy serous fluid in such cases, the bladder inflamed, and often sloughing of the nates and hips. When the interruption of function is not complete, disease of the cord will likely produce rigidity, convulsions, tremors or simple weakness of the corresponding muscles, pain, tingling, numbness of the corresponding limbs and surfaces. If the injury or disease be below the intercostal nerves, the breathing is not injured, but paralysis only results in the lower extremities, perhaps in the hips or even higher, and life *may* be long. Disease, affecting the *lateral* half only of the cord, will derange motion in the corresponding parts on the *same side of the body alone*, and perhaps sensation also. Paralysis of one side of the body with anæsthesia of the other, is perhaps explainable by the decussation of the sensiferous fibres of the posterior roots of the nerves. Though in some cases sense and voluntary motion are destroyed, the excito-motory functions may still exist even in an exaggerated degree. The upper extremities are sometimes deprived of sensibility, or voluntary motion, or both, and yet the lower parts may be uninjured, owing very likely to the nerves of these not being affected, or to implication of the *roots* of the upper spinal nerves in disease. Disease of the roots of the upper cervical nerves may cause inequality in the pupils of the eyes and point to probable mischief in the head, when the disorder is purely spinal. As all the acts of ingestion and expulsion are governed by the spinal marrow and its incident and motor nerves, it is to be expected that disease in the upper part of the spinal system should affect the orifices of that part, the larynx, gullet, cardia; and disease of the lower part should disturb the functions of the lower orifices, the rectum and anus, the bladder and urethra, the os uteri. The *anterior* root of each spinal nerve consists of *motor* fibrils; the *posterior*, of *sensiferous*: the same is not true of the anterior and posterior *columns* of the cord. The posterior white columns are not the channels of sensation. It is probable that a part at least of their office concerns the co-ordination and regulation of the movements of the body. The anterior or antero-lateral column and the gray matter are the agents of motion and sensation. In disease of the cord not involving the roots of the nerves, the power of moving the limbs is commonly earlier diminished than their sensibility. The brain and spinal cord sympathize largely under disease. The dura mater of the cord is very slightly connected by very loose areolar tissue to the bony vertebral canal; but it intimately

adheres to the foramen magnum, thus preventing fluid from passing from the cranium into the spinal column. But the space between the dura mater and pia mater of the cord, communicates with the cranium. Sometimes, but not often, the *membranes* only of the cord are inflamed; but usually there is also inflammation of the meninges of the brain and the substance of the cord.

SPINAL MENINGITIS.—*Symptoms.*—The commonest symptoms of meningitis of the cord are pains, often intense, extending along the spine into the limbs, and, like rheumatic pain, aggravated usually by motion; rigidity, or titanic contractions, and sometimes violent spasms of the muscles of the back and neck, amounting sometimes to episthotonos; a similar affection of other muscles, as of those of the upper and lower extremities; a sense of constriction in various parts, the neck, back, abdomen; feelings of suffocation; retention of urine; priapism; obstinate constipation; and, with these, rigors often. These symptoms vary according to the seat and extent of the inflammation. The spasmodic symptoms are explicable by the fact, that the nerves, which branch off from the cord, receive a covering of pia mater. The pain along the spine is said to be aggravated by percussion, but not by simple pressure.

The causes of spinal meningitis are often obscure. It may extend from the cranium, or be caused by external violence.

Inflammation of the *substance* of the cord, like that of the cerebral matter, leads to softening, induration, suppuration.

INFLAMMATION OF THE CORD.—*Symptoms.*—The following are the symptoms which attend inflammation and its events, according as the cord is affected from above downward: convulsions of the head and face; inarticulate speech; loss of voice; trismus; difficult deglutition; spasmodic breathing; irregular action of the heart; constriction of the chest; vomiting; pain of the belly; sensation of cord tied round the abdomen; dysuria; retention of urine; incontinence of urine; constipation; tencsmns; involuntary stools; convulsions, or palsy of the corresponding voluntary muscles; or palsy succeeding to convulsions.

The pain of meningitis of the cord is more severe than that of the substance of the cord; moreover, stiffness and spasms of the muscles mark meningitis; palsy, with or without anæsthesia, and preceded by convulsions, most commonly mark inflammation of the substance of the cord or suppuration of it. Relieve retention of urine by the catheter. Urine may dribble away (incontinence) on account of the bladder being over-full. The distended bladder rises beyond the umbilicus, is hard and dull on percussion, and sometimes the fluctuation of the urine is felt. The urine becomes thick, ropy, alkaline, and exhales a very offensive, ammoniacal smell, and after death the lining of the bladder is found thickened, red, and covered with adhesive mucus—*i. e.*, is *chronically inflamed*.

LECTURE XXVIII.

INFLAMMATION OF THE SPINAL CORD—Continued.—*Treatment.*—This, *mutatis mutandis*, is the same as that recommended in inflammation of the brain and its membranes. In acute cases, bleed *freely* from the arm, or apply cups along the sides of the spine; strictly enjoin perfect rest in the horizontal posture; mercury is generally proper. In more chronic cases, cupping is a capital remedy; counter-irritation, especially by issues on one or both sides of the spine, is often essential. Attend to the bladder

and keep the part *dry* and *clean*. When, from constantly lying in bed, any part begins to be red and angry, protect it by a plaster; or rub it with brandy to prevent the skin from breaking; or, better, use Dr. Arnott's hydrostatic bed. Like the brain, the spinal marrow may harden under chronic inflammation, and also be encroached upon by tumors, fibrous, serofulous, or malignant. The symptoms which these occasion are those of slowly increasing paralysis or rigidity of muscles, without fever, or reaction.

APOPLEXY.—The following are its phenomena: A person falls down suddenly, lies without sense or motion, and cannot be roused; but his pulse beats, perhaps with unnatural force, his breathing continues, though labored and stertorous, and his face is often flushed and turgid. Apoplexy is coma happening suddenly or rapidly. Apoplexy cannot be distinguished from the effects of narcotic poisons, as opium, spirituous drinks, &c., by the condition of the cerebral functions, for they are the same in both cases; but they may be diagnosed by the history, &c., of the case.

Terminations.—The coma of apoplexy may terminate in three ways: 1. It may cease more or less rapidly and leave the patient in health. The coma is perhaps caused by a disturbance of the balance of the arterial and venous circulation in the brain; or by some great alteration of the force and rapidity of that circulation; or more likely, perhaps, the temporarily accumulated blood may, by pressure, cause transient coma. 2. Coma may end more or less quickly in death, leaving in the brain much extravasated blood, or in the ventricles, or beneath the arachnoid, much serous fluid; or it may leave *no* trace. The poison of unpurified blood may produce fatal coma, without any obvious disease of the brain; as in Bright's disease and retention of bile. Apoplexy, which destroys life and leaves no trace, is *simple* apoplexy. Of the other two kinds, that attended with extravasation of blood, and the more common, is *sanguineous apoplexy*, or *cerebral hemorrhage*; that attended with effusion of serum is *serous* apoplexy. 3. The coma may terminate in *partial* recovery. One or all of the cerebral functions may be left impaired; the mind enfeebled, motion limited or lost in some parts, sensation benumbed or extinguished. Most always, in these cases, some extravasated blood or, occasionally, limited softening or disruption of the brain is found.

Modes of Attack.—The apoplectic attack is apt to occur in three ways: 1. In this form the patient falls down suddenly, deprived of sense and motion; his face generally flushed, his breathing stertorous, pulse full, but not frequent, sometimes below the standard; in some cases there are convulsions, in others rigidity and contractions of the muscles of the limbs, sometimes on one side only. The immediate prognosis is uncertain. Some die soon and much blood is found in the cranium; some die later, then often serum only is found; sometimes neither is found; some recover perfectly, some partially. 2. In this form there is generally sudden and sharp pain in the head; the patient becomes pale, faint, sick, and usually vomits; sometimes he falls down in syncope, or a state resembling it, with a bloodless cold skin, and a feeble pulse. Occasionally there are some convulsions. Sometimes he does not fall down, there being only slight and transient confusion with the pain. The patient soon gets over these and is quite sensible, but headache remains. After an interval, varying from a few minutes to several hours, he becomes heavy, forgetful, incoherent, and sinks into fatal coma. The temporary shock is caused by the rupture of a blood-vessel, and the coma by the subsequent escape of blood. Occasionally there is paralysis of one side. Very few recover from this; it is worse than the former kind; and

much blood is usually extravasated. The symptoms in this form depend on the giving way of some cerebral vessels. Sometimes a clot of blood may stop the rupture for a time. 3. In this form there is sudden loss of power on one side of the body; frequently loss of speech, with no loss or only temporary loss of consciousness. The hemiplegia sometimes passes gradually, and in a short time, into apoplexy. Sometimes the patient gets well soon; sometimes not for weeks or months; sometimes he never gets perfectly, but only partially well. Sometimes he remains a paralytic, perhaps speechless, though possessing his other faculties, and dies, after some weeks or months, worn out. In the outset there is not always complete hemiplegia. Most commonly in these cases extravasated blood, sometimes serous effusion, sometimes no change, is found. The same symptoms sometimes attend softening of the brain, or inflammation and its consequences.

Premonitory Symptoms.—These are headache, especially beginning in old age, and more especially if accompanied by vertigo or nausea and retching; vertigo, even without headache, sometimes slight and transient, sometimes habitual—headache and vertigo may exist without any danger of apoplexy—transient deafness or blindness; slight and partial paralysis; as double vision, squinting, numbness of parts, inarticulate speech, &c. The functions of thought are sometimes also affected, as shown by a loss or defect of memory on all or some particular subject, by drowsiness, temporary confusion of thought, vague dread, indecision, irritability, &c.

SYMPTOMS OF A FIT.—The fully formed apoplectic state is marked by most or all of the following circumstances: perfect unconsciousness; infrequent pulse; often full, perhaps intermitting; breathing slow, sometimes interrupted or irregular, attended with stertor or snoring during inspiration, and with puffing out of the cheeks during expiration; countenance often turgid and livid; pupils commonly contracted, sometimes unequally; limbs motionless, either from palsy, or the want of *will* to move them; many or one limb sometimes rigid, or trembling, or convulsed; perhaps inability to swallow; bowels usually torpid, or acting involuntarily; urine passed involuntarily or dribbling away. These symptoms denote that the morbid influence which produced the apoplexy has extended to the cranio-spinal axis. Death is, in almost every case, preceded by profuse and universal perspiration, often cold and clammy; the pupils are sometimes dilated and, perhaps, of unequal size; the pulse becomes more frequent, and the breathing more rare. The spinal functions are gravely implicated if the lids do not close when the lashes are touched. This appalling state is, there is reason to believe, produced by *pressure* on the brain; though there may be coma without pressure, and pressure without coma.

Effects.—If the patient recovers from the coma, he may live a few hours, or days, or many years. The functions are often restored, but much more commonly paralysis remains. All the voluntary muscles on one side of the body, divided equally by a vertical line, are powerless; or all the paralyzed muscles lie on the same side; this is *hemiplegia*. *Paraplegia* is paralysis of all the parts below a transverse line, and it results sometimes from cerebral, but much more commonly from spinal disease. The muscles of the face in hemiplegia, when affected, are, as a *rule*, affected on the same side with the limbs; the mouth is drawn to the sound side and the protruded tongue is commonly pushed towards the paralyzed side by the healthy muscles. Sometimes it comes out straight, or even towards the sound side, or not at all. In these cases it is with some effort, and at intervals, suddenly thrust out; the voice is thick, muttering, unintelligible. The legs, face and tongue recover sooner than the arms, and the arm is

oftener affected than the leg. The limbs are often feeble, sometimes loose, sometimes stiff and contracted. It has been remarked that the muscles of the thorax and abdomen are seldom palsied in hemiplegia depending on brain disease, but almost always so in that depending on mischief in the upper part of the spinal cord. It is also stated that hemiplegic paralysis dependent on spinal, and not on cerebral mischief, is more persistent in the leg than in the arm. Anæsthesia often exists, but it is less common and less intense than palsy, and much sooner recovered from. The mental faculties are generally, but not always affected, the memory, temper and character being injured. The palsied limbs waste, but sometimes swell from serous effusion, caused by the slowness of the circulation in those limbs. The palsied limbs are also colder than their fellows, owing to diminished circulation in the capillaries; moreover, they do not resist external heat or cold as well as sound parts, as shown by the effects of frost or hot bottles, &c., applied to them. In apoplexy the involuntary muscles are sometimes implicated, as shown by the obstinate constipation, in which the peristaltic action of the involuntary muscles suffers. Any disease which inflicts extensive injury on the encephalon will, very likely, disturb the functions of the heart, alimentary canal, and the involuntary muscles.

LECTURE XXIX.

APOPLEXY—Continued.—Pathological Conditions.—A moderate quantity of serum, poured out rapidly, could, by pressure, cause fatal coma.

Cerebral hemorrhage, which is the most common source of apoplectic and paralytic disorders, proceeds from rupture of the cerebral vessels. This rupturing is accounted for by the facts, that these vessels are long and slender; that their coats are thinner and weaker than in other parts; that they are unprotected by investing sheaths, and but slightly supported by the soft cerebral substance; that they are subject to earthy and cartilaginous deposits, which diminish their bore and render them brittle. The hemorrhage occasionally takes place from the capillaries.

The blood is effused *upon* or between the membranes, or into one or more ventricles, or into the substance of the brain. The blood poured into the cerebral substance may make its way to the ventricles, or, more seldom, to the surface. Blood in the cerebral substance is not necessarily fatal. It is contained in cavities of different sizes, and is at first soft and dark, tinging the neighboring substance. In time, as its watery part is absorbed, it assumes different colors and may be finally re-absorbed, leaving a cavity with a delicate serous or thick and fibrous lining membrane. If the opposite walls adhere, there is left a fibrous, knotty cicatrix. Sometimes the walls are merely opposed. Sometimes they remain separated and empty, or contain a soft, orange-colored, spongy tissue, with vessels or a gelatinous or serous liquid; or they are traversed by a few threads of areolar tissue. The coagulum of blood may be absorbed in five months, or not for three years. Cicatrization is perhaps slower when the effused blood crosses and tears the fibres than when it does not. The extravasated blood sometimes becomes solid and organized. The clot may provoke suppurative inflammation; or the tearing of the nervous substance may cause spontaneous suppuration. After death *white softening* is often found. It is caused by defective nutrition, owing to disease of the cerebral arteries,

or by the plugging or compression of one or more arteries and consequent on cutting off of the supply of blood to the brain. Softening of the brain may be caused by inflammation. It and effusion of blood often coexist. With the softening paralysis occurs, without loss of consciousness, for there is no necessary pressure. The hemorrhage is much more frequent in or near the corpora striata and optic thalami, because these are softer and contain more and larger vessels than other parts. These are the seats most often of atrophic softening. Arteries at the base of the brain are subject to aneurisms, which may burst and cause hemorrhage.

LECTURE XXX.

APOPLEXY—Continued.—The general and perhaps universal rule in partial palsy is, that hemorrhage on one side of the cerebrum or cerebellum is attended with palsy of the opposite side of the body. This is owing to the fibres of the anterior pyramids decussating and passing to opposite sides at the junction of the medulla oblongata and medulla spinalis. These decussating fibres strike into the centres of the opposite valves of the cord, and implicate the sentient and motor portions of it. The fact of the muscles of the face and tongue on the same side with the palsied limbs being also palsied, though receiving their nerves from *above* the place of decussation, is owing perhaps to the decussated fibres, as they pass, interlacing with the upward fibres, which bend towards the origin of the ninth and seventh, and of the eighth and fifth nerves. The affected cerebellum causes palsy of the opposite side, owing to its fibres and those of the pyramids interlacing in the pons varolii. When blood is effused into one side of the cerebrum and into the other side of the cerebellum, palsy of the side opposite to the cerebral hemorrhage only occurs. These are likely anomalous cases.

Predisposing Causes, &c.—One apoplectic fit is apt to be followed by others. The tendency to apoplexy is hereditary. It is most prone to attack those with large heads and red faces, short, thick necks, short, stout, squat build. It may, however, attack others also. It is more frequent in advanced life. A strong predisposition to apoplexy is engendered by Bright's disease, by disease of the cerebral vessels or of the chest, both of which interfere with the circulation; by the cessation of habitual discharges, as piles, &c.; by intemperance.

Causes.—The causes of apoplexy are any thing that hurries the circulation and increases the force of the heart's action, as strong bodily exercise, &c.; any sudden obstruction to the return of the blood from the head, as in certain thoracic diseases, holding the breath, straining, laughing, playing on wind instruments, loud and long talking, violent emotions, crowded rooms, the sun's heat, warm baths, drunkenness, venereal excitement, stooping, different tight ligatures around the neck, exposure to cold, which drives the blood inwards from the surface, and also aggravates chest affections, &c. External cold and, perhaps, certain barometric conditions of the atmosphere, help to explain the existence of apoplexy as an epidemic. Hypertrophy of the left ventricle of the heart and cerebral hemorrhage sometimes exist as effects of disease in the arterial trunk; but disease of the right chamber, impeding the circulation, may sometimes be the cause. Moreover, ossification of the cerebral arteries, or a similar condition or dilatation of the *commencement of the aorta*, impedes the flow of arterial blood; so that hypertrophy is produced often by, and compensates for, the

disease of the mouth of the aorta, and the cerebral hemorrhage is the effect often of disease of the cerebral arteries.

Prognosis.—If, after suitable remedies, coma persists for many hours, the prognosis, already, perhaps, precarious and uncertain, becomes worse. In those cases which begin with pain of the head, faintness, nausea, and which pass on to coma, the prognosis is positively bad, for it is pretty certain that blood has been extravasated. In paralytic cases, if coma supervene, the prognosis is gloomy, if not it is favorable. The symptoms of the apoplectic state which are more especially of evil omen relate, almost all of them, to the automatic functions of the cranio-spinal axis; as the open, fixed, unwinking eye; the explosive flapping of the cheek in expiration; the inability to swallow; the slow, sighing, interrupted breathing; the loosened splinters; also, perhaps, the profuse sweat—symptoms of these kinds may be expected to arise from hemorrhage in or near the medulla oblongata, or from injury in the brain, causing pressure on the medulla oblongata.

Treatment.—Obviate the tendency to death. If it be by *coma*, the blood-letting and evacuating plan is required; if by *syncope*, stimulants and restoratives are necessary. If the pulse be full, or hard, or thrilling, or if there be external signs of *plethora capitis*, bleed. After one sufficient bleeding, cupping the nape of the neck or temples gives further relief. If the pulse warrant it, bleed, though the patient be pale; and if the head and face be turgid, bleed, though the pulse be small, for the small pulse may depend on organic heart disease. Cupping and leeching the head are peculiarly adapted to cases where the arterial action is feeble, but the veins turgid and the capillaries of the head and face loaded. If the skin be pale and cold, pulse feeble and flickering, cautiously apply warmth to the surface, and cautiously administer diffusible stimuli, especially the preparations of ammonia; sesqui-carbonate grs. v, or sal volatile, 3 ss, mixed with camphor julep are ordinary doses. Watch for symptoms of reaction. Loosen any tight part of the dress, and bleed, when necessary, to produce a decided impression on the circulation. Repeat the venesection if the symptoms require, which is seldom the case unless the first bleeding was mismanaged. Even though blood be poured out upon the brain, bleeding largely and at once will do good; by diminishing the stress on the arteries, and so tending to stop the hemorrhage; by lessening the danger of inflammation; and by favoring the rapid absorption of the extravasated blood. Bleed not too much, for it may cause convulsions, or syncope, or fatally weaken the old. In hemiplegia without loss of consciousness, venesection is justifiable only when there is also early rigidity of the palsied muscles, betokening irritation and threatening inflammation of the brain. In ambiguous cases, wait the effects of purgatives. These are of signal service. If the patient can swallow, give ℥ ss of calomel and follow it up by a black dose; if he cannot, put two or three drops of croton oil as far back on the tongue as possible. Without waiting for the medicine, given by the mouth, to act, administer strong purgative and stimulating enemata; as 3 iv or vi of turpentine, suspended by the yolk of an egg in gruel or warm water. In combination with blood-letting and purgatives, cold lotions to the head are often useful, especially if its surface is hot. Blisters near or upon the head are often serviceable, after due bleeding, in rousing the patient from coma. Emetics are safe only in cases where the coma appears to depend wholly or in part on a loaded stomach.

After-Treatment.—When the immediate danger has passed and palsy remains, be not too busy, but trust to time. To the young and strong give small and repeated doses of mercury; in all cases keep the bowels freely

open once or twice a day by aperients; enjoin perfect quiet; and very short commons. Diuretics are proper when the urine is not plentiful. Meat, drink, and tonics, electricity, or warm baths, are certainly not permissible in the earlier stages of palsy after apoplexy. If, after some time when all febrile action has ceased, the palsy seems stationary, cautiously try to stimulate the torpid nerves, and to accelerate the acquirement of power by the mind over the muscles. Electricity or galvanism are most relied on. In palsy of long standing, try to awaken the dormant powers of the muscles by stimulating friction. The preparations of iron, cautiously used, do good.

LECTURE XXXI.

SPINAL HEMORRHAGE, PARAPLEGIA.—The term *apoplexy*, applied to effusion of blood in any other organ than the brain, is a perversion of language. *Spinal hemorrhage* occurs occasionally, but the symptoms are not distinctive; they are, *pain* in some part of the spine, convulsions, palsy; being the same symptoms as are produced by inflammation, softening, mechanical injuries and other disorders of the same part. Spinal is much more rare than cerebral hemorrhage. Its symptoms are often sudden.

PARAPLEGIA.—*Causes.*—The cause of *paraplegia* is sometimes obvious; sometimes not. Effused blood, softening, the traces of inflammation, tumors, pressure in the spinal cord or its membranes, may produce it. Softening is the commonest condition found. Often, the palsy creeps on insidiously with no particular pain, or any morbid condition of the vertebræ. The legs get weak, heavy, and drag after the patient; the toes tingle or are numb, and feel as if ants were crawling on the skin, (*formication*.) The lower limbs get weaker, the palsy creeps to the bladder and rectum, then to the arms, and finally death follows; faint traces or none at all may be found in the brain or spine. The separate existence of a "true spinal marrow," distinct from the brain and its prolongation into the spinal canal, and performing functions independent of sensation, consciousness, and will, is shown in many cases by the paralytic limb, when pinched, springing up, of its own accord. Bed-clothes, flatus in the intestines, the passage of urine, &c., may cause this springing. The palsied limbs are more readily excited when the influence of the cerebrum is excluded by disease of the cord; the excitable parts lie beyond the seat of the injury. This fact may point out the part of the cord injured. In hemiplegia these reflex movements do sometimes, but not often, exist, for the sensorial influence is not entirely cut off. *Emotions* may sometimes thus affect the limbs. When no involuntary movement can be excited, the spinal disease is, at least as low as the upper lumbar vertebræ. With the loss of power there is usually more or less anæsthesia. Paraplegia may depend on some primary morbid state of the *nerves* of the cord. Exposure to cold may injure the functions of the *afferent* nerves; and disorder of the efferent perhaps causes palsy. Coexisting kidney diseases and enteritis, perhaps, paralyze the lower limbs. In most cases of paraplegia the urine, at length, becomes ropy, alkaline and stinking, and the bladder presents the appearances of chronic inflammation, the surface being rough and red, and its coats thick. It is likely that the bladder is first affected, and pours out unhealthy mucus which changes the urine. Paraplegia is sometimes functional, and may be produced by cold, intem-

perance in drink, excessive sexual intercourse, but, especially, by self-abuse. It may also result from serous effusion into the spinal canal originally, or descending from the cranium. In most of these obscure cases there are some giddiness, transient confusion of thought, loss of memory. These cases are common; they are usually slow and tedious.

Treatment.—Attend to the bladder. Try friction along the spine; blisters to the loins or sacrum, frequently repeated; issues, and electricity. Sometimes strychnia may be proper, which, in sufficient doses, causes tetanic spasms, usually of the palsied limbs only, with very little or no affection of the sensorium. Use it cautiously; it does no good, but harm, unless the cord be free from organic disease. Begin with no stronger dose of strychnia, or sulphate or acetate of strychnia, than gr. one twelfth every six hours; cautiously and gradually increased until twitchings of the limbs, or some obvious effect follows, then continue the same dose as long as required. The tincture of cantharides in 5 ss doses, as a diuretic, is sometimes good. It also excites the functions of the paralyzed *sphincter vesicæ*, thus counteracting incontinence of urine.

Paralysis being a loss of the function of motion in muscular parts, it is incorrect to speak of palsy of the kidney or nerve.

FACIAL PALSY AND ANÆSTHESIA.—*Symptoms, Physiology, &c.*—These are sometimes indications of extreme danger, but often they are only inconvenient, disfiguring, but not dangerous. Facial palsy affects one side of the face. On that side all power of expression is gone, the features are blank and still, the eyelids motionless; the other side is natural, except that the angle of the mouth may be a little awry. Generally, sensation is perfect. Sometimes sensibility is lost, but the power of motion is perfect. Inability to close the eyelids is pathognomonic of facial palsy. The palsy results from suspension of function of the portio dura of the seventh pair of nerves; the anæsthesia from a similar condition of the fifth pair, the former being the motor nerve of the facial muscles, the latter the sentient of the same. The masseter and temporal muscles may not be paralyzed with the other muscles, as they receive their motor nerves from the fifth pair. The portio dura may be affected by sudden injury done to its trunk, or by disease, or by pressure. If the nerve is affected in the skull, other portions of nervous matter and other muscles are most generally involved. When the facial muscles alone are paralyzed, the portio dura within the bone, or the part of it in front of the ear, is, in most cases, affected; hence this form of paralysis is not generally dangerous.

Causes.—The causes may be mechanical violence, external or internal disease, a stream of cold air; these last are the most obedient to remedies; or the cause may not be obvious. Sometimes, but rarely, the muscles, supplied by the portio dura, are alone paralyzed when the brain itself is involved. When deafness occurs it marks an affection of both the portions of the seventh nerve, and therefore points to a probable internal cause. The same remarks apply to anæsthesia which have been made of palsy. The anæsthesia may or may not portend danger, according as the fifth nerve is affected or not near its origin.

Treatment.—When the complaint is recent, and has an obvious cause, the remedies will readily suggest themselves. When the cause is cold, or a blow, or any thing likely to cause inflammation, treat for inflammation, remembering that a small amount of disorganization or thickening around the nerve may render the deformity permanent. If there be inflammatory fever, bleed from the arm; if not, take blood from near the affected nerve by cups; apply fomentations, or, better, conduct the steam of hot water against and into the ear, and give mercury just to touch the gums. Iodide

of potassium is often eligible. If the brain is likely implicated, treat diligently. If evidences exist of chronic disease in the petrous portion of the temporal bone, as tenderness of the mastoid process, deafness, or protracted discharge from the ear, an imperfect state of the membrane tympani, very active treatment is of little use. Employ counter irritation and the remedies of *otitis*. Purgatives and blisters sometimes do good. Sometimes the patient loses the powers of motion and sensation in almost every part of the body, and yet lives for a long time.

LECTURE XXXII.

TETANUS.—There are two kinds of spasms, *tonic* and *clonic*. The former is a long-continued contraction of the muscles, the relaxation taking place slowly, after some time, the contractions again, after an interval, perhaps, coming on, as in cramps in the leg; the latter is a repeated, forcible, and quick succession of contractions, the relaxations being as sudden and frequent as in convulsions. In disease the two are sometimes mixed.

Symptoms, &c.—*Tetanus* (*-tension*, to stretch) is characterized by an involuntary, long-continued, violent, and painful contraction, cramp of the voluntary muscles of various parts, or of nearly the whole body. Generally the muscles of the neck, jaws, and throat, are the earliest affected. There is difficulty and uneasiness in turning the head and opening the mouth; at last the jaw closes gradually, but firmly, or suddenly. Four-fifths of the cases begin thus, with *trismus* or *locked-jaw*. The muscles concerned in swallowing become affected. There is soon an acute pain at the lower part of the sternum, piercing to the back and depending on cramp of the diaphragm. The pain is subject to aggravations in paroxysms, each paroxysm being attended by increased contraction of other implicated parts. The spasms extend to the trunk, extremities, face, and finally to the tongue, hands and fingers. The hands and fingers are sometimes movable. All the implicated muscles, from first to last, *continue* contracted, hard, and swelled, in their centres. There are exacerbations, however, of the spasm, perhaps every ten minutes or so, and lasting for two or three minutes, and then the muscles return to their former state. The slightest cause, change of posture, speaking, &c., may bring on the exacerbation. As the disease advances, these paroxysms become more frequent: a rapid increase in the frequency of their recurrence is a sure sign that the disease is severe and dangerous. The more speedily the intervals between the paroxysms shorten, the worse it is. The spasms may give way during sleep, but return after. When the muscles of the back are the most affected, as is usually the case, the body is bent backward (*opisthotonos*), and the patient rests on his head and heels. When the body is bent forward, it is *emprosthotonos*; when to one side, *pleurosthotonos*, or *tetanus lateralis*. Sometimes the whole body is rigidly extended. In all these forms, the prognosis is the same. During a fit, the forehead is corrugated, the brow knit, the eyeballs motionless, staring, the nostrils spread, the angles of the mouth drawn back, the teeth set, (*risus sardonius*.) The pain, especially that at the sternum, is intense. It is worse during the exacerbations. Sometimes there may be no pain. The violent contractions sometimes break bones and teeth. There are almost always obstinate costiveness from spasmodic closure of the anus, and perhaps from the medicine. The stools are usually very offensive and unnatural. There is no fever. The pulse and respiration are quickened, and often a sweat

breaks out during the exacerbation. In the last stages of fatal cases, the pulse becomes quick and feeble, and the sweat is cold. The mental faculties are unaffected, unless occasionally, when the powers of life are failing.

Modes of Death.—Death appears to result partly from apnea, for the thorax is fixed by spasms, but chiefly from asthenia, for the heart flags, and the patient cannot take nourishment. Sudden death in tetanus is probably owing to spasms of the respiratory muscles, and, perhaps, of those of the glottis.

Causes, Time of Attack, &c.—The most general causes of tetanus are exposure to cold, and bodily injury. The former is *idiopathic* or *spontaneous*, the latter *traumatic* tetanus. The latter is the more common; the former being very rare. Tetanus is more frequent in hot than in temperate climates and seasons. Heat is a predisposing cause, and, in traumatic tetanus, cold is an exciting cause. Traumatic tetanus may follow hurts of any part and of every kind, degree, and extent; it comes on also in various stages of the injury, sometimes after the wound is healed. It results oftener from injury of the extremities, than of other parts; from punctured wounds, than from others, especially in the sole of the foot or balls of the thumb. Generally, tetanus comes on between the fourth and fourteenth day after the injury; more usually in the second week. The later it comes on after the injury, the milder generally it is. Tetanus from cold and damp comes on much earlier, often in a few hours.

Prognosis, Pathology, &c.—Tetanus is *acute* or *chronic*. When the spasms come on suddenly, recur often, increase in frequency and violence, the chance of recovery is small; death sometimes occurs on the second day, generally before the fifth: after the ninth day the prospect is somewhat better. Some die as late as the sixteenth, twentieth, rarely as late as the thirty-fifth day. Idiopathic tetanus is generally more chronic than traumatic; *i. e.*, the contractions take place more slowly, the paroxysms do not increase in violence and rapidity. Tetanus is sometimes mimicked by hysteria. The symptoms produced by poisoning with strychnia are also those of tetanus; the two cannot be distinguished, except from the history of the case. The pathology of tetanus is obscure. The symptoms most likely result from irritation of the spinal cord, or its afferent nerves, the brain not being involved. When the irritating cause acts on the cord itself, the tetanus is *centric*; when on some distant part, *eccentric*; worms in the alimentary canal may act *eccentrically*. For any cause to produce tetanus, the body must be predisposed. The bony scales sometimes found on or in the arachnoid of the cord do not cause tetanus; for it often exists without them, and they without it.

Treatment.—This is always uncertain. A vast majority die under every treatment. Opium has done good. It should be given in large doses, for pain fortifies the nervous system against the influence of narcotics; the liquid form is best; as laudanum, or a solution of the acetate or muriate of morphia. At the same time use opium externally, as by applying a broad opiate plaster along the whole spine. Physic and food may be carried into the fauces by a flexible tube passed through the nostrils or behind the back teeth. When opium has done good, it has been always, perhaps, in mild or chronic and, generally, idiopathic cases. Opium fails in severe cases, is of equivocal utility, and is said to excite the motor functions of the spinal cord. Blood-letting does not cure tetanus. It may be useful as an auxiliary to other measures, when there is any appearance of inflammation, as fever and pain along the spine, or pain in the wound, increased on the approach of spasms. Bleeding, if adopted, should be tried early, freely and fully, but cautiously, lest the tendency of the disease to exhaust the powers of the heart be increased. The *warm bath* has been found by some useful,

by others useless or even hurtful. The *cold* bath is injurious. The cold affusion may do good chiefly in the idiopathic form. To use it, take the patient out of bed on an extended sheet, pour cold water over his body, wipe him dry, and place him in another dry bed. This often, for a time at least, diminishes spasmodic action and procures sleep. *Ice* to the *spine* may, *perhaps*, do good. In cases of poisoning by strychnia, if the patient is seen early, the poison should be evacuated from the stomach by emetics. Brandy and water seems to have done good.

LECTURE XXXIII.

TREATMENT OF TETANUS—Continued.—Severe cases, especially traumatic, most always are fatal: the less severe are sometimes recovered from. Idiopathic cases are less severe and more hopeful. Bark, wine and spirits in full doses, in chronic cases, may be useful. The system resists the ordinary influence of alcohol. Mercury to salivate has done good in chronic cases, other cases being too early fatal to admit of it. The system in this complaint somewhat resists the influence of mercury, but less so than that of wine and opium; for the functions of organic life are but little involved.

Purgatives, in less severe cases, are useful. Very large doses are commonly required: the stools are very unnatural. The frequent act of going to stool should be avoided. Croton oil is a good purgative. Foxglove and tobacco are ticklish remedies, for they cause sickness, faintness, fluttering pulse, syncope and coldness of surface; besides, they influence the involuntary muscles, especially the heart, more than the voluntary ones, which are the parts affected; and, moreover, they tend to increase the asthenic tendency of the disease, and the tendency to death, particularly in the latter periods of it. Digitalis is unmanageable in large doses, and useless in small ones. The tobacco is not given by the mouth, but is thrown into the rectum in the shape of smoke, or, perhaps better, infusion. Some think tobacco the best remedy. Musk in large doses (as grs. x or xx at intervals, so that 3 i or even ii be taken during the day) may be useful. Prussic acid and belladonna have failed. Carbonate of iron is sometimes serviceable, especially in *chronic* cases, for it must be used *for a few days*. Oil of turpentine as a purgative is good, on account of worms being found in the bowels. Give it in large doses, not less than an ounce at a time; it may be mixed with an equal quantity of castor oil. Give by the mouth or rectum, or both. Strychnia has been suggested in severe cases, the object being to produce a morbid action which would supersede and be less perilous and more manageable than tetanus. Mr. Morgau proposes to give poisons which cause paralysis, with the object of counteracting the tetanic muscular action. The vapor of ether or chloroform will be tried. Amputating the wounded limb will not arrest the morbid action after it has been fairly established. Do not amputate even a small member unless the injury render it useless. The tourniquet perhaps does no good. Division of the principal nerve going from the injury has proved beneficial. Probably it must be done *early*, before the morbid nervous condition is established.

Since the smallest movement or impression on the body or senses will often bring on severe spasms, the patient should be kept quiet, in a darkened room, away from noise and visitors; blood-letting, if advisable, should be done early and sufficiently; bleeding, cupping or leeches should not be repeated, unless plainly required; the bowels should be cleaned out

in the outset and then let alone; the nerve should be promptly divided in severe traumatic cases; and, nothing to the contrary, give wine in large doses, and nutriment. If the tendency to mortal asthenia can be staved off, the disturbance of the excito-motory apparatus, on which the tetanus depends, may perhaps pass away.

TRISMUS NASCENTIUM, the "*Jaw-fall*," or "*Ninth-day*" Disease.—*Treatment*.—This usually comes on in the second week after birth. Some refer it to irritation of the meconium in the intestines; others, to irritation of the wound of the navel. A dose of purgative medicine is the best remedy. Pure air assists recovery. Tetanic symptoms, occurring in ague, should be treated as severe ague. Tetanus in hysteria should receive the treatment of hysteria, especially oil of turpentine by the mouth or rectum, and the cold affusion.

HYDROPHOBIA.—This is essentially a spasmodic disease belonging to the nervous system.

Symptoms, &c.—The symptoms are excessive nervous irritability and apprehension; spasms of the muscles of the fauces, excited by various causes, even the most trivial, as a gust of wind, insects crawling on the skin, &c., but especially by the sight or sound of liquids, and by attempts to swallow them; and extreme difficulty or impossibility of drinking. The bitten part acts as any other sores, and gradually heals. After the *period of incubation*, which lies usually between six weeks and eighteen months, the patient feels pain or uneasiness in the bite; if healed, the cicatrix tingles or aches, or feels cold or numb or stiff; sometimes it becomes red, swelled, or livid; sometimes it opens afresh and discharges a peculiar ichor; the pain or uneasiness extends towards the centre of the body. This is the period of *recrudescence*. Within a few hours, or certainly a few days after these local symptoms and during which the patient feels ill, the specific constitutional symptoms come on; the patient is hurried and irritable; speaks of pain and stiffness perhaps about his neck and throat; cannot swallow fluids; chokes and sobs when he tries to do so; and after two or three days of this state dies exhausted by way of asthenia. Generally, when the disease has shown the peculiar hydrophobic symptoms, it runs a short and fierce course, and is perhaps always fatal. The patient is generally suspicious and very irritable; in most cases there is mania, or delirium and garrulity, and sometimes paralysis of the lower extremities. In tetanus the mind is clear and the patient serene to the last. The spasms of hydrophobia are clonic; those of tetanus, tonic. In the former there are thirst and an accumulation of tough and stringy mucus in the fauces and about the angles of the mouth; in tetanus there is no thirst, and seldom stringy mucus in the mouth. Vomiting is probably always present in hydrophobia, rarely in tetanus. The pulse, though it may be hard and strong at the outset, soon becomes frequent and feeble, and the strength declines rapidly. Death occurs from one to five, sometimes seven, eight or nine days after the commencement of the specific symptoms, most commonly on the second or third day. Generally the paroxysms become more violent and frequent, and exhaust the patient; sometimes all bad symptoms disappear, and the patient may fall asleep and suddenly wake to die; or sometimes a sudden and violent convulsion may kill him.

Anatomical Characters.—The morbid appearances found after death are various, uncertain and unsatisfactory. Sometimes none are found; sometimes there is vascularity of the brain or spinal cord; often the mucous membrane of the fauces, œsophagus, and stomach, or of the larynx and trachea, or of both these tracts are red and covered with adhesive mucus. The morbid anatomy of this disease throws but little light on its nature, or its proper treatment.

Causes.—It is just possible that hydrophobia may be spontaneous. It may be communicated to man by the fox, wolf, jackal, cat, badger, horse, human being, and perhaps by others. All animals may take the disorder from the dog; it is important to know whether these in turn can always impart it to others. Mr. Youatt does not think that the disorder can be imparted by the saliva, unless the cuticle is broken; he holds that it is communicable by mere contact with the mucous membrane. The mere scratch of the rabid cat does not likely produce the disease. Nor does the bite of the healthy, though angry dog or cat, likely cause it.

LECTURE XXXIV.

HYDROPHOBIA—Continued.—*Period of Incubation, &c.*—The symptoms which exist at the period of reerudescence, and their being soon followed by the peculiar paroxysmal symptoms, tend to prove that the virus from the bite remains imprisoned for some time in the wound or cicatrix, though, perhaps, it may immediately enter the system and there multiply and diffuse itself till the disease explodes. Cut out the scar, therefore, as soon as possible, even at the period of reerudescence. Of those bitten by mad dogs, less than one-fifth are injured. The danger is less if the bite be through clothes, leather, &c. The slaver of a rabid wolf seems to be highly virulent. Mr. Youatt is of opinion, that the power of the virus ceases with the life of the animal. Do not act on this opinion in dissecting rabid animals. It is uncertain at what period the peril from the bite of a mad or suspected animal is fairly over. In a vast majority of cases, the disease has broken out within two months, but sometimes not for five, six, eleven, nineteen months, even, it is said, for three, and, once, for twelve years. This same uncertainty is noticed among dogs. When a suspected animal bites a person, it should not be killed, but be watched and permitted to die of the disease, if it shall so happen, so as to be sure whether or not it was rabid.

Symptoms in the Dog.—Mr. Youatt says that a rabid dog never has fits; nor is there any dread of water, but an unquenchable thirst; no spasms attend the effort to swallow, but, sometimes, in dogs an inability to swallow from paralysis of the muscles of the jaw and throat. These dogs fly eagerly to the water and lap it, but cannot get it down. All rabid quadrupeds, except, perhaps, occasionally, the horse, drink with ease and avidity. Healthy dogs cannot recognize mad ones, nor do mad ones exhale an offensive odor, or necessarily run with their tails between their legs. Mr. Youatt says that the earliest symptoms of madness in the dog are, sullenness, fidgetiness, a steadfast gaze of suspicion, an earnest licking or violent scratching or gnawing of some part, occasional vomiting and a depraved appetite, the dog swallowing all kinds of trash, even his own excrement and urine. Then he becomes irascible, flies at strangers, is impatient of control, seizes the whip, &c., quarrels with his companions, hunts the cats, tries to break his chain, demolishes his bed, bites other dogs. A seven-months' separation of all the dogs might extirpate the disease. Very early in the disease the dog's eyes glisten, there are slight strabismus and twitchings of the face; about the second day a considerable discharge of saliva commences, which continues only ten or twelve hours, and is succeeded by insatiable thirst. When the saliva ceases to flow, he works with his paws at the corner of his mouth to get rid of what appears to be viscid matter, and in these endeavors he often loses his balance and rolls over.

His lower jaw hangs down, but he can by a sudden effort sometimes shut it, though occasionally the paralysis of the muscles is complete. His tongue being less affected, he laps up water, but cannot retain it in his open mouth. The loins and extremities are often paralyzed, he staggers and often falls, he starts up and gazes eagerly at some real or imaginary object, plunges at it, then his eyes close and his head droops. Frequently, with his head erect, he utters a short and very peculiar howl, or he barks with a hoarse, inward sound, which generally terminates with the characteristic howl. Often the breathing is very laborious and the inspiration is attended by a grating and choking noise. On the fourth, fifth or sixth day he dies, occasionally in slight convulsions, but often without a struggle. After death there is usually found the trash previously swallowed, as straw, hair, earth, &c., or a dark fluid; sometimes neither of these is noticed.

Cause, &c.—Extreme heat of weather is not the cause of hydrophobia, for it occurs nearly as often in the spring, autumn, and even winter as in summer. Neither does the want of water in hot weather, nor of food, nor, very likely, does the period of sexual heat in any way produce the disease. Rabies most likely never occurs except from inoculation of the specific virus. The seat of the disease is the excito-motory system, the true spinal cord and its afferent and efferent nerves. The poison acts mainly on the nervous arcs pertaining to the throat, with which also the eighth pair of nerves is particularly connected. Whether the change is centric or eccentric, is uncertain; probably the sensibility of the afferent nerves of the fauces, skin, and air passages, is altered, as shown by the sighing dyspnea and strangling dysphagia.

Treatment.—Recovery perhaps never takes place. Every thing has been tried; copious bleeding, mercury, opium, arsenic, sugar of lead, oil of turpentine, cold affusion, belladonna, stramonium, prussic acid, white hellbore, strychnia, cantharides, the nitrous oxyde gas, alkalies, ammonia, carbonate of iron, electricity and galvanism, tobacco juice, guaco, mineral acids, violent exercise; besides these, to the brute were administered alisma, plantago, scutillaria, box, rue, veratrum, sabadilla, and tincinas poison. There is great difficulty in administering medicine by the mouth or rectum. Bleeding largely and injecting a like quantity of warm water into the veins has failed to cure. The nervous irritability has, in one or two cases, been much calmed by injecting a solution of a salt of morphia into the veins. Once the symptoms appeared much mitigated for a time by applying ice to the cervical part of the spine and to the fauces. Chloroform has failed, except that it quiets excitement and promotes enthanasia. Surgery appears impotent. Tracheotomy is not advisable, for death is by *asthenia*, not by *apnea*.

Prevention.—This may be effected by *early* and *completely* excising the wound; cut it out before the symptoms of recrudescence appear; or, even *after*, try it. Mr. Youatt trusts to the caustic, nitrate of silver; but the knife should be used if it can well reach the part. If not, cut away as much of the wound as possible, then for several hours wash the wound by pouring a stream of warm water into it; place an exhausting cupping glass from time to time on it, and finally apply the lunar caustic to every part. If the solid caustic cannot reach all parts, use a liquid escharotic; as nitric acid. Amputation of a bitten limb might be resorted to, if perfect excision were impossible. Put into the hole a skewer of the shape of the dog's tooth, and then cut it out by an elliptical incision. To know if the whole bite has been excised, pour quicksilver into the piece cut out, and see if a globule escapes. When the patient will not submit to the knife or caustic, fill the wound with ink and wash it till all trace of ink is gone. When thorough excision or cauterization is impossible, the

wound may be kept open and discharging for a long time by applying irritants. The theory of the poison being for a time contained in pustules about the frenum of the tongue, is all a hoax.

PROPHYLAXIS.—As a prophylaxis in dogs, Mr. Youatt thought boxwood had some effect, also belladonna, but, perhaps especially, scutillaria lateriflora, combined with belladonna. These preventions are scarcely reliable; but if any are used, Mr. Youatt's are preferable.

LECTURE XXXV.

EPILEPSY; (*επιληψία*, a seizure) FALLING SICKNESS FITS.—Involuntary motions belong more exclusively to the system of the true spinal marrow; yet cerebral changes may excite them. Epilepsy is probably not painful, is seldom immediately fatal, is often entirely recovered from, yet is often apt to end in fatuity or insanity.

Symptoms.—The leading symptoms are temporary unconsciousness, with clonic spasms recurring at intervals. So various are the forms and modifications of epilepsy, that no general description even of it can be given. The following is the most ordinary type: A man, apparently in perfect health, suddenly utters a loud cry and falls instantly to the ground senseless and convulsed; he struggles violently; his breathing is embarrassed or suspended; his face turgid and livid; he foams at the mouth; a choking sound is heard in his throat; he appears to be dying of apnea. Presently and gradually the phenomena cease; the patient is left exhausted, heavy, comatose; but danger is past, and in a short time he is again apparently well. The same train of phenomena recur again and again, mostly at irregular intervals. The cry, which is however sometimes absent, is generally a piercing and terrifying scream. The convulsions are strong, irregular, and often universal. In the beginning, the chin often is brought towards the shoulder by jerks, and one side of the body is usually more agitated than the other. The features are always greatly distorted. The brows are knit; the eyes sometimes quiver and roll about, sometimes are fixed and staring, sometimes the cornea is hidden beneath the upper lid; the mouth is awry; the tongue, thrust between, and often severely bitten by, the teeth; the foam, reddened with blood; the hands, firmly clenched, and the thumbs bent in upon the palms; the arms, thrown about, striking the patient's chest or other objects. Often the urine and excrement, and sometimes the semen, are expelled during the spasm. The violent spasms sometimes dislocate bones or break teeth. After the fit the patient sleeps soundly; there is incomplete coma, or rather the insensibility continues after the convulsions have ceased; the patient often wakes, confused for a time, and ignorant of the fit and of what passed during it; by degrees he perfectly recovers, but remembers nothing that passed during the fit. The circulation is deranged during the fit; the breathing is irregular, gasping, arrested; the heart palpitates violently; the pulse becomes frequent and feeble, sometimes it leaves the wrist, and returns as the spasm subsides; the face is turgid; the cheeks and lips, livid and purplish; the veins of the neck and forehead distended. This is the most severe, most common, and most marked form of epilepsy.

Very often the symptoms are much more mild. There are very slight and transient convulsions, as irregular motions of the fingers of one or perhaps both hands, or rolling or turning upward of the eyes, or twitch-

ings of the muscles of the face; sometimes there are no convulsions; there are no turgescence of the face, no foaming at the mouth; no cry; but a sudden suspension of consciousness, a short period of insensibility, a fixed gaze, a totter, perhaps, a look of confusion, but the patient does not fall. All this is momentary; the patient is soon well again, and perhaps does not know of any interruption of his business. This is *epileptic vertigo*; the other is the *epileptic fit*. These two forms are the same disease, for they may succeed each other, or mingle.

Sometimes the patient sinks down quietly, is pale, not convulsed, but insensible, like one in syncope. After recovery, he remains sick, languid, and confused during the day.

Duration, Period, &c., of Attack.—The severe attacks seldom last longer than half an hour; the average is probably between five and ten minutes. Attacks of several hours duration generally consist of a succession of fits, with indistinct intervals of comatose exhaustion. These are often fatal cases. Occasionally the first attack is fatal, or there is only one; oftener they return after many years; still oftener, they recur at irregular periods of a few months, or weeks, or days, or every day or night, or often in the twenty-four hours. These frequent attacks are principally epileptic vertigo; sometimes they are periodical. The fits often *commence* in infancy about the period of first dentition, but they may begin at any age. They may depend on disorder of the bowels and stomach. The most common periods are about the seventh or eighth year, the time of second dentition, and from fourteen to sixteen, shortly before puberty. The attacks are very apt to come on at night; at first they often are *confined* to the night, and, it is said, chiefly occur when the patient is falling to sleep, or awaking from it. When the disease is *yielding*, the fits often happen at night only.

Precursory Symptoms.—Sometimes there are no warnings of the coming fit; less frequently there are. The warnings may last for a few minutes, or hours, or a whole day. The warnings are very variable, being some unatual state of the mind, feelings, high or low spirits, &c., loss of, or voracious appetite, a great flow of urine, an ill smell, strange taste, extraordinary noises, spectral illusions, headache, giddiness, a flushed, or pallid, or livid face, delirium, difficult articulation, vomiting, &c.

Uneasy feelings may exist for several days; restlessness, disturbed sleep, a peculiar and sudden coldness of the extremities, and internal workings. The most curious precursory symptom is the epileptic *aura*, *i. e.*, a sensation of a stream of water, or cold air, or of a spider creeping, proceeding commonly from some distant part, as a thumb, finger, or some spot of the trunk, on the skin towards the head; this aura may get no farther than the pit of the stomach. When it reaches the head, or stops at the epigastrium, or elsewhere, consciousness forsakes the patient, and the fit comes on. Sometimes spasms of the muscles of the part whence the aura proceeds, precede the general spasms. The source of the aura may be centric or eccentric. The warning symptoms sometimes give a *false* alarm.

After-Effects.—After the convulsions, often there remains profound stupor, from which the patient can generally be roused for a time. Coma has lasted a week. After it the patient is sometimes languid, stupid, sometimes furiously delirious for a while; often there is temporary, occasionally permanent partial paralysis, the eyes are fixed or squinting, or the pupils dilated, the legs drag, speech falters, sometimes he is completely hemiplegic. A single fit seldom leaves behind any permanent ill; many do; after these, the mental powers decline, the features assume a peculiar character; often hopeless fatuity or confirmed imbecility or insanity results. The amount of injury to the mind depends, likely, more on the *repetition*

of the fits than upon their precise *na'ture* or *severity*. Some epileptics preserve their faculties to old age.

Causes.—The cause of the fit may be centric or eccentric. The paroxysms are possibly caused by a disturbance of the balance of the arterial and venous circulation in the head, or by a temporary pressure, or by an increase or diminution of blood in the head.

The tendency to epilepsy is hereditary. It often attends on unnatural forms of the head, as sugar-loaf, and other unsymmetrical shapes. It often attends chronic hydrocephalus. The serofulous diathesis strongly predisposes to it. Whether the sex has any influence is unknown.

Anatomical Characters.—After death, in epileptics whose intellect and locomotion were not permanently injured, often no alteration of the brain or spinal cord is found. Sometimes organic disease in the head exists; a serofulous tubercle, a spiculum of bone projecting from the skull. When the above persons die *in the fit*, there is always a strong injection of the vessels of the encephalon. This congestion is not the cause of the fit.

After death, in those whose mental faculties were permanently injured, or who suffered some paralysis, were found induration, with sometimes a general injection of the whole white matter of the brain, and mostly dilatation of the vessels; sometimes softening of the whole white matter, the gray matter being irregular on its surface, marbled, or rose-colored in its substance, and sometimes altered in consistence. Often the membranes adhere to the convolutions. The changes which predispose to epilepsy oftener affect the surface than the deep parts of the brain, as tumors, alterations in the membranes or the cranium or spinal cord. Other morbid conditions, often found, are diseased liver, biliary concretions, granular kidney, renal calculi, stones in the bladder, worms in the alimentary canal, diseases of the uterus or various parts.

LECTURE XXXVI.

EPILEPSY—Continued.—Predisposing and Exciting Causes.—Commonly, the fits are more severe the less frequent they are. Debauchery of all kinds, the habitual use of intoxicating liquors, above all, masturbation, tend to aggravate or create a disposition to epilepsy. The exciting causes are fright, any strong mental emotion in those already subject to it, bodily pain, and any great disturbance of almost any principal bodily function. Sometimes the cause is unknown. The *nightly* attacks Dr. Bright attributes to the "congestion" of sleep; the *monthly* ones, in women, to nervous irritation in sympathy with the uterus; those occurring at *long intervals*, to some excess or neglect of the bowels. By observing what muscles or set of them are *first* affected by the spasms, and where the *aurá* arises, we may perhaps find the irritated organ or part, and thus know the nature and cure of the complaint. Other exciting causes are, repulsion of eruptions, especially about the head, when no proper artificial evacuations are obtained at the same time; the cessation of habitual discharges; profuse and unnatural discharges; and the sight of a person in a fit. The fits of impostors become at last, from habit, involuntary and really epileptic.

Diagnosis between True and Feigned Epilepsy.—Impostors perform where it most answers their purposes, as in frequented places, and where there is no danger of being hurt by falling; true epileptics are often seriously hurt by their falls. In epilepsy, the muscular strength is so great that it takes four or five persons to hold the epileptic; the impostor's strength is only

natural. Real fits, if long, are seldom violent; impostors make theirs long and violent. In true epilepsy, the eyes are usually partly open, with the eyeballs rolling and distorted; in the feigned, the eyes are shut, but opened occasionally to notice the bystanders. In the true, the dilated pupils do not contract when stimulated by light; in the false, the pupil is natural. In the true, the pulse is frequent and often irregular, and the skin is commonly cold; in the false, the skin is hot and covered with sweat from the exertion. Impostors do not bite their tongue; epileptics often do, and, besides, they void their excrement and urine and are insensible to external impressions. To try the impostor, press your thumb nail violently under his, or propose, in his hearing, to pour *boiling* water on his legs, and then pour *cold* water on them.

Distinguishing Symptoms between Epilepsy and Hysteria.—In epilepsy, there is perfect unconsciousness; in hysteria, not. In epilepsy, there is no globus hystericus, no alternations of laughing and crying. A solitary cry ushers in the former; repeated screams belong to the latter. The former is succeeded by a heavy, comatose sleep; the latter is not. Commonly these do not hurt themselves, do not bite their tongues nor foam at the mouth. In the former, the expiratory efforts suffuse the countenance; in the latter, the respiration is rapid and sobbing. Attacks of convulsions with insensibility, independent of epilepsy, are apt to follow sudden injury to the brain, stunning blows on the head, fractures of the skull, eruption of blood in sanguineous apoplexy, overwhelming mental emotions, and likely urea retained in the blood. They happen also in parturition, lead poison, hydrocephalus, hypertrophy of the brain, and in some eruptive fevers.

Prognosis.—This is seldom favorable. If the disease is centric, the nervous centres being organically injured, it is bad, especially if scrofulous disease or diathesis exist, or if the patient's ancestors have had it. It is bad in those having slanting foreheads or misshapen skulls. It is worse the longer the disorder has lasted, and the oftener the fits have been repeated. When the memory is permanently enfeebled or fatuity has come on, or there is any paralysis, perfect cure is hopeless. When the disease is eccentric, the prognosis is better, especially when the cause is known and removable. Many writers say children outgrow even habitual attacks of epilepsy, especially about puberty. Habitual epilepsy, though seldom curable, may most always, by treatment, be relieved as to its frequency and violence.

Treatment.—During the fit, keep the patient from injury, and, if possible, mitigate the violence and shorten the duration of the fit. Loosen all ligatures on the body; keep the head elevated somewhat. A piece of cork or soft wood, placed between the teeth, may keep the tongue from being bitten and the teeth from being broken. If the head be congested and hot, apply cold wet cloths to it, and if the extremities be cold, restore warmth to them—cramping salt into the mouth is said to shorten the paroxysm. Immersing children, especially if the extremities be cold, into warm water is often of much benefit. Bleeding during the fit is seldom proper, unless there be cerebral plethora, and then take only a moderate quantity by cups from the neck or temples. Excessive bleeding is very injurious. Abstraction of blood does not probably shorten the convulsions or sopor. During the intervals get rid of the predisposition and avoid the exciting causes, if possible. Redress any tendency to general plethora, by regimen and exercise, by abstaining from stimulating food and drink, and, if necessary, by depletion. If there be a tendency to emptiness and asthenia, which perhaps is more common, use a tonic treatment. The object in both these cases is to give firmness to the nervous system. Do not carry the lowering

or tonic plan too far. When the patient is young and full of blood, when he has a hard pulse, or any feverishness, when some customary discharge was previously suspended, when the disease has not become habitual; in any of these cases it will often be proper to take blood, always right to purge actively and order an abstinent regimen. When former paroxysms were preceded by signs of plethora capitis, headache, throbbing of the temporal arteries, distension of the superficial veins, a flushed countenance, the lancet or cups may sometimes avert an impending attack. If the patient is pale and weak or nervous, or if he has had many fits, active depletion is injurious; but invigorating means are required, as the cold shower bath, other cold baths being unsafe. A general and pleasant glow after the bath shows it to be a good tonic. Of the mineral tonics, the salts of silver, zinc, copper, and iron are chiefly praised. The nitrate of silver is objectionable, for it is apt to cause a lead color of the skin if used too long, as it must be to do good, and it will probably do no good even then. Begin with gr. ss in a pill three times a day; grs. xv have been given as a dose. Large doses purge. The oxide or sulphate of zinc, or cuprum ammoniatum, but especially zinc or iron, as vinum ferri, &c., do good. Liquor arsenicalis is thought good; use it cautiously. These have been tried: valerian, assafetida, wormwood, the mistletoe of the oak, the cardamine pratensis, rue, cotyledon umbilicus, the sedum acre, indigo; narcotic vegetable preparations, stramonium, belladonna, hemlock, lettuce; animal substances, musk, castor, ox-gall.

Epileptics are apt to improve under every plan of treatment, for a time. They should be temperate in all things; their food and drink should be simple, nutritive, unstimulating. They should rise early, take regular exercise in the open air, keep their heads cool, and extremities warm. All excitement, bodily or mental, should be avoided. In fits from moral contagion or irritation, avoid the cause, fortify the nerves, and calm the mind. If the fits likely depend on syphilitic affection of the bones of the skull, give mercury a full trial, but preceded by the iodide of potassium. When organic disease of the brain is suspected, follow a gentle and long-continued course of mercury, carefully watching the effects. It is proper to try counter-irritation; blisters, a seton in the neck, or croton oil liniment. Dr. Pritchard divides the integument of the head to the bone in the direction of the sagittal suture, and keeps it discharging for some time by issue-peas. In eccentric cases remove the cause. Sometimes there are symptoms of diseased liver; slight yellowness of the skin, uneasiness and tenderness in the right hypochondrium, and low spirits. Rectify the liver. Oil of turpentine is very good, in ordinary cases, in small and frequent doses; as 3 ss to 1, every six hours. Oil of turpentine has done good as an anthelmintic. It sometimes produces strangury. If the bowels are costive, equal parts of oil of turpentine and castor oil go well together.

Prevention, &c.—Interrupting the precursory symptoms sometimes prevents a coming fit. So may dashing cold water on the face, using snuff, smelling salts, perhaps a strong mental effort, arousing the dull, intercepting the aura, &c. The patient should be watched at all times, and kept from injury, from cold, from all danger of falling, from crowded places, &c. He should have about him a diffusible stimulus, as a potion of camphor mixture and ether, which may prevent the fit.

LECTURE XXXVII.

CHOREA—ST. VITUS'S DANCE.—This is a spasmodic disease belonging to the nervous system, very likely to the excito-motory part.

Symptoms.—The prominent symptom is an irregular and involuntary clonic contraction of some voluntary muscles, which, however, are not wholly withdrawn from the government of the will. Consciousness and volition are perfect. The movements are rendered imperfect and perverted by, it would seem, some wanton and perverse power. These absurd movements are not paroxysmal, but continue all day or for weeks, but usually cease during sleep. There is no fever. Chorea usually begins with slight twitches of a few muscles of the face or of one of the upper extremity, by degrees the spasms become more decided and general. All the voluntary muscles are liable to be affected. Sometimes the lower extremities are not affected, never exclusively so. Those of the face seldom escape. Generally it is more severe and difficult to cure in proportion to the extent. The features are twisted into all kinds of ridiculous forms; then succeeds a vacant look, and then again the convulsion. Chorea is more common in girls than in others. The patient, when asked to put out her tongue, makes sundry attempts to do so; then suddenly thrusts it out, and as suddenly withdraws it and snaps the jaws together. She writhes and contorts her shoulders; cannot keep her hand or arm still half a minute; cannot guide her hand, without many efforts, to her mouth at meals. When sitting or standing, her feet shuffle on the floor, or one is thrown over the other; her walking is most uncertain, she halts and drags her legs, and advances in a jumping manner by fits and starts. Articulation is impeded. The fantastic and capricious movements of chorea are usually more marked and general on one side, or are sometimes confined to one side. Sleep is obtained with difficulty, and in the waking state there is no calm. The loins, hips and elbows are chafed by friction with the bed-clothes; the limbs, in their perpetual contortions are bruised; the bitten lips bleed; the countenance looks piteous; occasionally there is an involuntary cry or squeak; at length come exhaustion and death.

Who Attacked—Period of Attack.—Those most subject to chorea are the “nervous.” If only the affected limb be held, another part takes on the convulsion. The irregular motions can often be controlled by the will or, for some seconds, by a long, deep inspiration. Chorea is propagable by imitation. It is very common between the eighth and sixteenth year, especially among those of dark hair and eyes; sometimes it occurs earlier; sometimes in adults and old age. The imbecility of mind, fatuity and foolish expression of countenance, which usually occur in strongly-marked and long-standing cases, pass off and return more than once.

Prognosis.—Chorea is rarely fatal; it is cured, and recovered from.

Pathology.—The few fatal cases have thrown no light on its pathology; any organic diseases, which have been found accompanying it, were rather predisposing causes. Some affirm that the *cerebellum* regulates locomotion and, therefore, is the seat of the change which produces chorea. The irregular movements are not the effect of imperfect paralysis, nor of convulsions, properly speaking, but of want of harmony between the muscles.

Causes.—Duration.—The cause may be centric or eccentric. In most cases there is no pain; sometimes there is pain in the head, and even *only* on the side opposite the agitated limbs. Cupping or leeches cure this pain. Sometimes the patient is well, except there are irregular move-

ments; but generally the bowels and stomach are out of order during or before the complaint; there are a capricious appetite, costiveness, tumid belly, offensive breath; and a foul tongue or irregular menstruation. Chorea is sometimes complicated with hysteria, acute rheumatism, rheumatic carditis, and certain skin affections owing likely to the circulation of bad blood. Any thing may cause chorea which makes a forcible impression on the nervous system, especially fright. Irritation of the stomach and bowels, improper diet, accumulated feces, worms, or difficult menstruation, or second dentition, may cause it. Chorea may last from a week or two to some months. It often terminates at puberty, especially in females. It seems to be rare as we approach the equator, it is almost unknown in the tropics.

Treatment.—Most cases would get well without physic. 1. Give stability to the nervous centres. 2. Remove any cause of excitement of the incident nerves. Genuine chorea is seldom dependent on organic inflammatory disease. Do not bleed, except locally for pain in the head. Purge. Begin by clearing out the bowels with calomel and jalap, or some active aperient. Let there be *at least* one full evacuation daily. Give tonics, especially the cold shower-bath every morning, or every other morning, on getting out of bed. If the patient be feeble, make the water tepid at first, then gradually cold. One of the best tonics is iron. Begin with half-drachm doses of ferri carbonas; increase to one, one and a half, or two drachms; give it three or four times a day. It may be given with twice its weight of treacle to form an electuary. Ferri carbonas cum saccharo may be used without treacle. When this does no good, give grs. ii or iii of sulphate of iron as a dose, or ℥ss of the citrate; or ʒiiss of Griffith's mixture, (mist. ferri comp.,) or ℥xx or xxx of the tinctura ferri muriatis. Iron may form hard, large, masses in the bowels. Sulphate of zinc, increased gradually in severe cases to ten grains, given three times a day, is often good when the carbonate of iron fails. Beyond this the zinc is emetic. Arsenic is good, but hazardous. Dr. Bigbie never failed with arsenic. He gives gutt. v of liquor potassa arsenitis twice daily, an hour after meals, adding one drop every third day till he observes its specific effects; he then withdraws it for a while. Its earliest effects are itching and swelling of the eyelids, redness of the conjunctiva, nausea, uneasiness at the pit of the stomach, and particularly a peculiar white silvery appearance of the tongue, seldom accompanied with tenderness. Mix equal quantities of oil of turpentine and castor oil, and give ʒii or ʒss of the *mixture* every morning, or every other morning, according to its effects upon the bowels; if they be very sluggish, or the stools unnatural, give calomel grs. ii, twice or thrice a week at bed-time. The diet should be plain and simple, but nourishing and even generous. Exercise should be taken in the open air in dry weather; strong *emotions* should be restrained.

CHRONIC CHOREA is an affection which very much resembles the genuine form, but the movements are confined to the same part, especially the limbs, neck, or face, almost always for life, are attended with good health, and are not dangerous. It consists of *awkward tricks*, as knitting the brow, shrugging the shoulder, &c., &c. Medicine has no effect over this.

Varieties.—There is a sort of chorea, or morbid nervous condition, characterized by movements, not spasmodic, but depending on an irresistible propensity to muscular action, and increased, often to a mania, by irritation or music, *volition* being morbid and perverse. The movements are often regular and surprisingly rapid, consisting of dancing, drumming on objects, (malleation,) circumvolutions, turning the head,

moving in a straight line, &c. The patient is conscious and is generally a female, in whom menstruation is suspended or irregular.

THE LEAPING AGUE is a spasmodic affection, resembling chorea on one hand and epilepsy on the other, and is propagable by imitation. It is seen among religious enthusiasts, whose actions, at first wilful, are soon performed from necessity.

Treatment.—As the cause is moral, let the treatment be the same. In the solitary cases, correct the bowels; attend to the uterine functions; strengthen the system. Coldousing might do good.

LECTURE XXXVIII.

PARALYSIS AGITANS—SHAKING PALSY.—Mr. Parkinson defines this thus: “Involuntary tremulous motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forward, and to pass from a walking to a running pace; the senses and intellect being uninjured.” The latter symptoms are sometimes wanting. Its approach is insidious and slow; at first there is trembling of some part, of the head, oftener of the hands or arms. This becomes more decided and spreads to other parts; the patient has not perfect control of his legs, he stoops and often steps quicker to avoid falling, or leans on an attendant; after some time he cannot feed himself, his speech and deglutition fail, saliva dribbles away, he cannot retain his urine and feces, and finally dies. The exact pathology of this disease, or its cure, is unknown.

Treatment.—Treat the symptoms. Set right all wrong functions; regulate the bowels; procure sleep; nourish and uphold, but do not stimulate, the patient.

MERCURIAL TREMORS—TREMBLES, is produced by the fumes of mercury, and is a convulsive agitation of the voluntary muscles, which occurs only when they are brought into action. It comes on sometimes suddenly, sometimes slowly; the tremors gradually increase till they get violent, and locomotion, mastication, and deglutition, &c., are impaired; finally, if the cause continue, wakefulness, delirium, loss of memory, unconsciousness supervene. The digestive organs become disordered, appetite fails, nausea is felt, the tongue becomes furred, gas collects in the intestines, the patient becomes brown, the teeth turn black, the pulse is generally full and slow. These effects are produced in from two to twenty-five years. The complaint may last two or three months, or more; sometimes it is never perfectly recovered from. It is not fatal. The nerves are at fault; the will has not perfect control over the muscles. Mental emotions, alarm, &c., aggravate the tremors.

Treatment.—Remove from the cause; order good diet, fresh air, regular exercise; give tonics, as steel or quinine; very small doses of strychnia are useful. Iron is preferable. Prevent the disease by avoiding the fumes, ventilating the rooms, cleanliness, and by using a respirator. Iodide of potassium removes the imbibed poison from the body; but as it sets the poison afloat into the circulation, it may happen that acute poisoning may result. Begin with small doses of the iodide, and gradually feel your way.

HYSTERIA.—This mimics various other diseases, and is almost exclusively confined to women, especially the feeble. The various forms of it may be reduced to two.

Species.—Symptoms.—1. This resembles an epileptic fit. The trunk and

limbs are strongly convulsed, the patient struggles violently, rises into a sitting posture and then throws herself back again, forcibly retracts and extends her legs and twists her body; often it takes two, three, or four persons to hold a slight girl; the head is generally thrown back, and the throat projects; the face is flushed; the eyelids closed and tremulous; the nostrils dilated; the jaws often firmly shut, but with no *distortion* of countenance; the cheeks are at rest, unless during the screams or exclamations; the patient strikes her breast often and quickly if not restrained, or carries her fingers to her throat as if to remove some oppression; she sometimes tears her hair or clothes, or tries to bite others; her breathing is deep, laboring, irregular, and her heart palpitates. After a short time the violent agitation ceases, the patient lies panting and trembling and starting at the slightest noises or touch, or sometimes remains motionless with a fixed eye; suddenly the convulsive movements return again, and then again quiet; this alternation of spasm and quiet go on for a variable time. The whole often terminates in an explosion of tears and sobs and convulsive laughter. A *variety* of this form is when the patient suddenly sinks down insensible, and without convulsions, with slow and interrupted breathing, a turgid neck and flushed cheeks, and recovers depressed in spirits, fatigued, and crying. The above symptoms belong to the nervous system, and indicate great derangement of the functions of animal life.

2. In this form, the principal marks of disturbance refer to some of the viscera. The patient feels a sense of uneasiness in some part of the abdomen, often towards the left flank; a ball appears to roll about, rising first to the stomach and then to the throat, where there is a choking sensation; the act of swallowing is often repeated; the abdomen becomes distended with wind; loud rumblings and sudden eructations take place; the heart palpitates much; the patient is sad and prone to tears. After, and sometimes during, the fit, much limpid pale urine is voided. This form often occurs alone; it often, also, precedes the first, or convulsive form.

Diagnosis of Epilepsy and Hysteria.—The non-convulsive form of epilepsy is characterized by vertigo and a suspension, even brief, of the mental powers; in the non-convulsive form of hysteria, the phenomena consist in derangement of the organic functions of the thorax and abdomen, the ganglionic nervous system seeming chiefly affected. In the epileptic *fit* there is entire loss of consciousness, and no recollection after, of what occurred during, the fit; this is very seldom the case *during* the hysterical *fit*, and never at its outset, for the patient knows what happens during the fit. In the former, the face is usually livid, and frothy or bloody foam escapes from the mouth; in the latter, these symptoms do not exist. In the former, the convulsions are often more marked on one side of the body than on the other, and less irregular, and rapidly repeated, and there is a strangling rattle in the breathing; in the latter, the flexion and extension of the limbs and contortions of the trunk are more sudden and capricious, respiration is deep, sighing, mixed with cries and sobs, and often with laughter. In epilepsy, the eyelids are half open, the balls rolling or dull, projecting, with the pupil usually dilated, the mouth drawn to one side, the teeth grinding, the gums exposed, the tongue protruded and bleeding, the complexion leaden; in hysteria, the cheeks are red but at rest, the eyelids closed and trembling, the eye, which is covered by the lids, is fixed, perhaps, but bright. When there is a sudden loss of consciousness, with convulsive movements, a livid face, frothy saliva and convulsions more on one side than on the other, the disease is *epilepsy*. Dr. M. Hall says, that in hysteria the larynx is never closed; in epilepsy it is. In the first, the inspiration is heaving, sighing; in the second, there are violent, ineffectual efforts at expiration.

Duration of the Fit, &c.—The hysterical fit may last only a quarter of an hour or less, or several hours or days. In a vast majority of cases there is some marked derangement of menstruation, the uterus or ovaries acting on the muscles through the medium of the nervous system. When the menstrual function is disordered without hysteria, it is perhaps because there is no predisposition to it, nor that nervous irritability which conduces to it. The hysterical are often pale, have cold hands and feet, eat but little, dislike meat, have depraved appetites, eating chalk, pencils, &c., do not generally emaciate, but are plump, even ruddy sometimes. In these persons various parts of the nervous system are apt, even without cause, to fall into a disordered state, more or less resembling that caused by inflammation or organic disease in the same part. This should be kept in view.

DISEASES MIMICKED BY HYSTERIA.—Hysteria may mimic peritonitis. This may be known from the uterine condition and the history of the patient; besides, the pain of the abdomen, in hysteria, is excessive, and felt as much on the slightest touch as on firm pressure, and is felt also in other parts, as the neck, &c. In this case, purge well and give an assafoetida enema. Hysteria mimics stitches and pain in the hypochondria, especially the left. It mimics palsy, perfect hemiplegia, or paraplegia. In hysterical cases the paralysis is apt to come and go suddenly, without any affection of the face or tongue or other symptoms of palsy. It mimics *aphonia*, *laryngitis*, *dysphagia*. There is the "*hysterical breast*," the mamma being tender, painful, and perhaps somewhat enlarged. Make light of this to the patient, and treat the general system. There is the hysterical *cough*, which is loud, harsh, dry, like a bark, sometimes incessant, sometimes paroxysmal. There are hysterical hicough, eructation, vomiting, hæmatemesis, sanguineous expectoration, the blood coming from the mouth or fauces and hysterical joint affection and spine diseases. In the last, the patient is unable to stand, because she *thinks* she is. There is hysterical paralysis of the muscular fibres of the bladder, or spasm of its sphincter. Watch in these and similar cases that the patient does not impose on you by feigning these conditions. There is the *clonus hystericus*, a pain occupying one spot in the head, often above the eyebrow, and causing a sensation as of a nail driven into the part; and sometimes coming on every day at the same hour. The hysterical pain, which mimics inflammation, is increased on the slightest touch, and is felt in other parts than that affected; moreover, the symptoms, which resemble those of inflammation, are irregular and contradictory, rising and subsiding rapidly and attacking various organs in succession.

In doubt, pause, or treat on the most unfavorable supposition. Real disease may be mixed with hysterical symptoms. Hysteria, with its symptoms, may occur in males.

Treatment.—Prevent the patient from injuring herself; loosen her dress; admit cool air. Stop the fit by giving, if she can swallow, mistura assafoetida ζ ii; or ether 3 ss, with laudanum m xv to xx, in camphor julep; or a draught containing 3 i of the ammoniated tincture of valerian. When she cannot swallow, put stimulating volatile substances to the nostrils. Good is done by fetid or stimulating enemata, as assafoetida 3 ii, mixed with water O ss by means of the yolk of an egg; or turpentine ζ ss, mixed in the same way; or the same quantity of ice-cold water as an enema or applied to the pudenda. Sprinkle cold water freely or dash it on the face and chest. Purge actively, for the bowels are costive or unnatural. When other diseases are mimicked, especially in cases of bent and immovable limbs, use the cold affusion. As hysteria is propagable by moral contagion, prevent its spreading by threatening the cold affusion. Between the

paroxysms, restore stability to the nervous system, and set the uterine functions right. Regulate the bowels by aloetic aperients; give steel, shower baths; order regular exercise; prohibit hot rooms, late hours of going to and rising from bed, strong mental emotions, novel-reading, &c. Marriage sometimes cures. Young girls should not be confined too much, nor spend too much time in studies; they should take plenty of exercise in the open air.

LECTURE XXXIX.

CATALEPSY, Ecstasy.—*Symptoms.*—These are nervous disorders, happening mostly in persons subject to such complaints, and appearing often to be produced by similar causes. They are seldom dangerous; their pathology is obscure. Their treatment, for cure and prevention, is the same as that of hysteria. A fit of *cataplexy* implies a sudden suspension of thought, sensibility and voluntary motion, the patient remaining in the position, however fatiguing, in which she may be when attacked, or in which she may afterwards be placed, and the organic functions not being much affected. These attacks occur in paroxysms, alternating sometimes with hysteria, or occurring in connection with insanity. A minor form of this is, when the patient cannot speak or move, but is conscious of what is going on around. *Ecstasy* is a state in which the patient is lost to all external impressions, but wrapt in some object of the imagination, the muscles being sometimes relaxed, sometimes slightly rigid, and the loss of voluntary power being not complete; for the patient often speaks and sings. Mesmerism may produce this state.

NEURALGIA.—By this are meant diseases which consist of pain only, there being often no inflammation, no change of structure in the painful part, no fever.

Cause.—*Situation.*—The pain is owing to some morbid condition or irritation of a nerve. The cause of the pain may be placed in the painful spot, or in the brain, or in the spinal cord, or in the trunk of the nerve that supplies the affected part, or in one of its branches which is distributed to another part, (witness the pain of the thigh and testicle from irritation of the kidney, &c.,) or in some distant part which is connected with the painful part through the nervous centres only; or, finally, no cause may be known. The pain occurs in all parts, oftenest in the head; next, probably, in the abdomen. *Tic douloureux hemicrania*, certain forms of *angina pectoris* and of *gastrodynia* and *sciatica*, are neuralgic affections. The pain does not commonly follow the track of the nerve; but inflammation of it or its investments generally causes such pain.

Character of the Pain.—Truly nervous pains are characterized by their coming on suddenly, and sometimes going off suddenly; by their often intermitting; by their often, but not always, returning at regular intervals; by the total absence, generally, of heat and swelling, and often of tenderness too when they are external, and of febrile symptoms when internal; by their apparent dependence often on sudden changes of weather; by their occurring in the nervous and feeble; by their often abating under tonic treatment; and by their often being suspended during sleep. Long continued and intense neuralgic pain may give rise to even a moderate degree of inflammation of the part, which becomes tender to the touch, vascular and a little swollen. The neuralgic attack may recur at intervals of a few seconds only, or daily, or every other day, or at much longer intervals, re-

gularly or irregularly. Sometimes the pain is continual, but wonderfully aggravated by fits. It is sharp, sudden, twinging, momentary. Sometimes there is a feeling of cramp, but no spasm.

TIC DOULOUREUX.—*Symptoms.*—This is neuralgic pain situated in the facial branches of the fifth pair of nerves, nerves of sensation. Usually one only, sometimes two, sometimes the three branches are implicated. In the severe forms, the middle one, the infra-orbitary, is the most commonly affected. The torture is excessive. When the uppermost branch is affected, the pain generally shoots from the superciliary hole, whence the nerve issues, and involves the parts on which the nerve distributes its fibrils, the forehead, brow, upper lid, and the eyeball, sometimes. During the paroxysm, the eye is usually closed, the skin of the forehead on that side is corrugated, and the neighboring arteries throb, and there is a copious gush of tears. Sometimes, at each attack, the eye becomes blood-shot; after frequent attacks it becomes permanently infected. When the pain comes from affection of the middle branch, it sometimes comes on suddenly, sometimes slowly, being preceded by a pricking sensation of the cheek, and twitching of the lower lid; pain at the infra-orbitary foramen soon follows, spreading in flashes over the cheek, lower lid, ala nasi and upper lip, often stopping at the mesial line of the face. Sometimes it extends to the teeth, antrum, hard and soft palate, base of the tongue, and induces spasm of the neighboring muscles. When the pain is referable to the inferior, or maxillary branch, it darts from the mental foramen to the lips, alveolar processes, teeth, chin and side of the tongue, stopping often at the symphysis of the chin. Often it extends to the whole cheek and ear. Spasmodic action of the muscles is apt to disfigure the features and hold the jaw fixed.

Causes.—Trivial causes may bring on a paroxysm, a slight touch, a current of air, eating, &c.; pressure often gives relief. This disease occurs most commonly in debilitated systems, and is often attendant on disorders of the digestive organs. Sometimes it is connected, and alternates with rheumatism. It may be caused by exposure to cold and moisture; by malaria, and is then intermittent and periodical, and often yields to the remedies of ague. It is sometimes dependent on some general state of the system, or on exostosis, or diseased bones.

Treatment.—If the disease depends on debility, give carbonate of iron, as in Lecture XXXVII. Attend to the digestive organs, the unhealthy state of which is shown by the furred tongue, loss of appetite, costive bowels, or by pain only. Some carbonate of soda in water may counteract acid in the stomach. The following has cured: mix oleum tigllii gut. i or ii with compound extract of colocynth 3 i; give grs. v of this mass with grs. x of compound gallanum pill at bed-time. In rheumatic cases, try guaiacum; colchicum; calomel and opium; iodide of potassium. If a tumor or foreign body press upon the nerves, removing it with the knife might cure. If this cannot be done, or if the nerve be altered in structure, it is a question whether the nerve should be divided, or even the limb amputated. Remove or lessen any exciting cause. Violent bodily exercise has done good. As local means, belladonna or opium relieves pain. Aconitine gr. i, mixed with cerate 3 i, and about one-third of this smeared along the nerve two or three times a day, does much good. A saturated solution of iodine in a strong tincture of aconite is good. Another application, but not so good, is iodide of mercury ʒ ii to lard ʒ i, and rubbed into or placed on the part till some irritation is produced. Much may be hoped for from chloroform.

There is a kind of *faeache*, which is not neuralgia, for the pain does not occur in short, stabbing paroxysms, nor is it acute; it occupies the lower part of the face, the jaw principally. The muriate of ammonia often cures

this; give 3 ss in water three or four times a day. Stop it after four doses, if the pain continues. The iodide of potassium in doses of grs. v or vi may cure.

SCIATICA, *i. e.*, pain radiating from the sciatic notch, and following the course of the sciatic nerve, if inflammatory, must be treated as such by bleeding and blistering; if rheumatic, use calomel and opium, or colchicum; if it result from irritation within the pelvis, caused by disorder of the kidney, the oil of turpentine may do good; when neuralgic, try the treatment of facial neuralgia. Sciatica has been cured by sprinkling gr. ss or i of powdered morphine on the surface denuded by a blister the size of half a crown, put on the spot where the nerve emerges. When there is no fever, success may follow from swathing the limb, night and day, with flannel, thickly sprinkled with precipitated sulphur, and covering the flannel with oiled silk, or thin gutta-percha.

HEMICRANIA, *Migraine, Megrim*, is headache of one side, generally of the brow and forehead, sometimes of exactly one-half of the head. There is often sickness; it is often periodical. Sometimes it occurs in connection with hysteria, sometimes in women who suckle too long; sometimes malaria is a cause; sometimes the cause is unknown.

Treatment.—When there is anæmia, prescribe steel and the shower-bath; if the complaint is periodical, give quina. Arsenic, as liquor arsenicalis gutt. iv or vi, given three or four times a day, with attention to the bowels, cures in nine cases out of ten.

LECTURE XL.

INTERMITTENT FEVER—AGUE.—Of this there are three stages, the *cold*, the *hot*, and the *sweating*.

Symptoms.—When the ague is coming on, the patient feels a sensation of debility and distress about the epigastrium; becomes weak, languid, and listless, bodily and mentally; sighs, yawns and stretches; feels chilly, particularly along the spine; the blood deserts the surface; he grows pale; his features shrink; his skin gets dry and rough. (*cutis asserina*.) Presently the patient feels *cold*; trembles and shivers all over; his teeth chatter; his knees knock together; the hair of the scalp bristles, (*harripilatio*;) his face, lips, ears and nails turn blue; the respiration is quick and anxious; the pulse, frequent sometimes, but feeble; there is pain in the head, back, and loins; the secretions are usually diminished; the urine is scanty and pale; the bowels confined; the tongue dry and white. After a time, flushes of *heat* are felt, commencing usually about the neck and face; gradually the cold ceases entirely; the skin, features and extremities again return to their natural condition, but only for a while; the face becomes red and turgid; the surface *hot*, pungent and dry; the temples throb; a new kind of headache comes on; the pulse becomes full, strong and rapid; the breathing deep, but oppressed; the urine scanty and now high-colored; the patient is restless. After a time again, the skin recovers its natural softness; the forehead and face become moist; soon a copious, universal *sweat* breaks out, with great relief to the patient; thirst ceases; the tongue becomes moist; the urine plentiful, but turbid; the pulse natural; pain departs; after a while the sweat ceases, and the patient is again well. The earlier symptoms are those of debility and nervous depression.

Varieties.—The cold stage may be absent; so may the hot; or, both being present, there may be no proportion between them. The paroxysms are

periodical; but it is not known *why*. The time between the termination of one paroxysm and the commencement of the next is the *intermission*; that between the beginning of one paroxysm and the beginning of the next is the *interval*. When the intermissions are perfect, the fever is *intermittent*; when they are not perfect, but the patient remains ill and feverish, it is *remittent* fever. *Quotidian* ague is that which occurs at the same hour every day; *tertian*, every other day; *quartan*, every third day. The interval of the first is twenty-four hours; of the second, forty-eight; of the third, seventy-two. The paroxysms of the first begin in the morning; of the second, at noon; of the third, in the afternoon. These are the *rules*, to which there may be exceptions. Sometimes quotidian paroxysms, occurring at noon or night, may be symptoms of local disease or of *hectic* fever. When the disease is about yielding, the paroxysms often occur later each time; this is *postponing*; when they occur earlier, it is *anticipating*, and denotes that the disease is getting more severe. The paroxysms of the quotidian last about ten or twelve hours; those of the tertian, six or eight; those of the quartan, four or six. The quartan has the longest cold stage; the quotidian the shortest. Quintans and sextans may occur; perhaps they are quartans postponing. *Double tertian* is when the paroxysms are daily, but the alternate ones only resemble each other. When two fits occur on the same day, as in the morning and evening, and this happens every other day, it is *tertiana duplicata*. *Double quartan* is explained *mutatis mutandis*, in the same manner as the double tertian, there being ague on two successive days, but never on the third. *Quartana duplicata* is, with the same explanation, similar to the tertiana duplicata. *Triple quartan* is that which occurs daily, but only those paroxysms of every third day resemble each other. There are other complications. *Incomplete* ague is shorn of one or more stages; of the rigors, of the heat, or of both of these. This often happens when the disease is leaving, though it happens at other times. Sometimes there is no distinct stage, the patient feeling frequently and irregularly chilly, languid, and uneasy; this is *dumb* ague. The quotidian often changes to tertian; tertian, to quartan; quartan to either of these. *Erratic* ague is that which has no definite type.

Complications, Duration, &c.—Occasionally ague is attended by violent delirium, especially in the hot stage. Sometimes there are convulsions, or syncope, or tetanic rigidity, or petechiæ, which disappear after the fit. The deviations may depend on constitutional predisposition; moreover, malaria may impart a periodic character to other diseases. Ague may last one day only, or a few days, or for years. It is much more common in spring and autumn than at any other season; autumnal ague is the more severe and dangerous. Quotidian ague is most common in spring; quartan, in autumn; tertian happens at both seasons.

All are liable to ague, but especially those of middle life, and men, for they are most exposed to the cause.

Causes.—Debility is a powerful predisposing cause; but the most powerful is the occurrence of the disease itself, for this renders the person liable to it under circumstances in which he would not otherwise be affected by it. When ague has occurred once, the east wind and exposure to cold are common re-exciting causes. Malaria, not simple bad air, but invisible effluvia, (gaseous or æriform probably,) from the surface of the earth, is the only primary *exciting* cause of intermittent and remittent fevers. The impure air of cities is prejudicial to health, but does not *generate* intermittent or continued fever. Its physical and chemical qualities are unknown. It is not peculiar to marshes. A certain and continuous heat, probably higher than 60° Fahr., and a certain quantity of moisture, are requisite to produce the specific poison of malaria. Earth is also essential, for it does

not prevail at sea. Vegetable decomposition is an accidental, frequent, but not, by any means, an essential condition of its evolution. Vegetable decomposition or animal putrefaction may go on and not produce malaria. To produce malaria, it appears to be requisite that there should be a surface capable of absorbing moisture, and that this surface should be flooded and soaked with water and then dried; the higher the temperature, and the quicker the drying process, the more plentiful and virulent is the poison evolved. The edges of swamps, rivers, &c., therefore, may be sickly. The hotter and drier the summer, the more frequent and fatal are the autumnal fevers. The disease may be latent for a long or short time, (period of incubation,) and break out after removal from the malarious locality.

Though natives and residents of malarious places are not so liable, as strangers are, to the violent forms of the fever, still they seem to be affected by the atmosphere; for they are puny, sickly, sallow, feeble in body and spiritless in mind, have swelled bellies, wasted limbs, are subject to dropsies and fluxes, are phlegmonous, melancholy and short-lived. Negroes appear to be proof against malaria. Loose, porous, sandy soil, appears highly favorable to the formation of miasmata; so does clayey soil, which retains moisture. Peat-bog or peat-moss is not productive of malaria.

LECTURE XLI.

AGUE—Continued.—Its Periodicity.—Malaria in low and hot situations may cause a disease not distinguishable from yellow fever; and as the locality becomes higher and cooler, the fever attends to assume, first the remittent, then the intermittent type.

Various explanations have been given of the regular periodic recurrence of the ague fits. Willis ascribes it to a periodic development of the *fermentable matter* in the blood. The question then is, why is this development periodic? Reil referred it to some *general law of the universe*, meaning, likely, the alternations of light and heat of the seasons, the ebbing and flowing of the tides, the states of sleeping and waking, &c. This is unsatisfactory. Mr. Bailey attributes it to the modifications induced in the system, especially in the circulation, by the changes from the upright to the recumbent, and from the recumbent to the upright position in the twenty-four hours. But this is not the explanation, for animals which do not undergo these changes suffer ague. Besides this theory does not account for continued fever. Mr. Roche says the *causes* of ague are periodic; in spring and autumn, when ague chiefly prevails, the difference of temperature and humidity of the atmosphere by day and night is great; the emanations from putrifying vegetable matter are greatest during the hottest part of the day, are taken up into the air, and are deposited at night on the body, in the air-passages and perhaps in the digestive organs, thus causing ague and giving rise to the *habit* of suffering attacks of ague. To this it may be said, that for months the patient may be exposed to malaria before the disease appears. Moreover, this theory does not account for the different *types* of intermittent. Cullen is perhaps partly right when he ascribes it to some law of the animal economy, whereby it is subject in many respects to a diurnal revolution. This explanation may do for quotidian, but not for tertian or quartan fever; for there is no two-day or three-day habit. As to the *habit*, it may be asked how did the second, third, &c., attacks periodically recur to *begin* the habit? Besides, quotidian

ague occurs in the morning, when there is least effect from diurnal habit. The solution of this subject is still to be sought for.

Habits of Malaria.—Its Properties.—Malarious districts are much more dangerous at night, especially during sleep, perhaps because there is then more of the poison, or it is more condensed, or the body is then more susceptible. Leaving the house early in the morning is therefore hazardous. Malaria loves the ground; it tends downwards, probably because it gets entangled with fog. Lying down, therefore, to sleep in the open air at night is very perilous. Lower rooms of houses may contain the noxious effluvia, while the upper are free from it. Malaria is movable by the wind, being often blown into healthy places, and even up and across hills, especially if the wind blows for a long time from the same quarter. The wind may sometimes clear the poison from other places. In hot climates, especially where the trade-winds prevail, the lee side of swamps and rivers should be avoided in founding towns. Malaria loses its noxious property by passing over even a small surface of water. Drinking marsh water appears to cause the fever. On land, the malaria may be carried over a considerable distance. Malaria is attracted towards, and adheres to, the foliage of lofty umbrageous trees, so that in malarious places it is very dangerous to go under large, thick trees, and still more so to sleep under them. Persons, therefore, who live to the leeward of trees are protected from the malaria of the opposite side. In proportion as cultivation and population increase, so does the power of malaria decrease; and in proportion as the former decrease, so does the latter increase. In large towns ague is less common than in small ones, because, probably, of the many fires burned in the former.

Effects of Malaria.—Anatomical Characters.—If ague patients continue exposed to malaria, especially if their food, clothing, and shelter be bad, the disease is apt to become very dangerous, leading to disorder of the sensorium and of the abdominal viscera, even in the intermissions; sickness, diarrhea, dysentery, diseases of the liver. After death are found hepatic alterations, inflammation and ulceration of the mucous membrane of the alimentary canal; and, in long continued agues, the enlargement of the spleen (*ague cake*) is such as to be felt, and even its outlines seen. This state of the spleen is caused by repeated congestions of the internal vessels and viscera of the abdomen, a part of the blood coagulating, or slow inflammation being set up in the stretched covering of the organ. An attack of ague is not salutiferous.

Prognosis.—This, in cold countries, is almost always favorable; but if the patient were previously the subject of serious organic visceral disease, or if very old or infirm, ague may destroy him. In warm countries, ague is much more dangerous, and sometimes rapidly fatal. In these countries it is often accompanied by severe affections of the head, stupor, delirium, convulsions; and of the alimentary canal, diarrhea, sickness, and often black vomit. It is also prone to run into remittent or continued fever. In all countries, quartans are harder to cure than tertians or quotidians. The longer intermittents have lasted, the harder are they to cure, and the more danger is there of visceral disease. In cold countries, the cure would likely be spontaneous, if the patient were removed from the malaria, and protected from wet and cold and suitably nourished.

Treatment.—Give a calomel purge at bed-time; as calomel, grs. iii with rhubarb, grs. vi or viii, and quina next morning. Dr. Baillie says that, in obstinate cases, where a grain of calomel was given every night for eight or ten nights, bark cured in a few days. In the fit, cover the patient in bed, apply warmth to his feet, and give hot drinks during the rigors; order a cooler regimen during the hot stage; wipe the skin dry if there is much sweating.

LECTURE XLII.

TREATMENT OF INTERMITTENT FEVER.—In hot climates, where the disorder is apt to be violent and serious, the time for interference is in the first assault or paroxysm. During the paroxysm, the object is to alleviate the uneasy sensations of the patient, abridge the fit, avert the dangers arising from intense, long-continued, internal congestion, or from severe symptoms.

Cold Stage.—In this stage, diluent drinks have been recommended; also cordials, external warmth, opium, emetics, and bleeding. Diluent drinks are proper; let the patient have his choice of them; they are decoctum hordei comp., simple barley water, toast and water, weak gruel, tea, &c. These should be taken warm, and, if the patient is very feeble, make them gently *cordial*; weak negus, for example, or white wine whey may be given. External warmth is beneficial and helps to shorten the cold stage, as the pediluvium, or bags of hot salt or bran to the epigastrium, and a hot bottle or brick, wrapped in flannel, to the feet, or even the warm bath, or perhaps, best of all, the hot air bath. This bath is given by placing a cradle of wicker-work, covered with blankets, over the patient, and then introducing beneath the blankets one end of a curved iron tube, and at the other end, which is expanded into a bell and looks downwards, applying a spirit lamp, which heats the air beneath the blankets. Friction with stimulating liniments along the spine often affords comfort and shortens the cold stage. Rubbing the spine of children with an embrocation of equal parts of soap liniment and laudanum, at the approach of the cold stage, often prevents the paroxysm. Opium has helped to cut short the cold stage and dispel the unpleasant symptoms. At the first approach, a dose of laudanum (never less than thirty drops) has been given; if, in ten or fifteen minutes, warmth did not come on, twelve to twenty drops more have been given. Repeat, if the next paroxysm threatens. Emetics are good only when there are signs of a loaded stomach, as nausea, ill-taste, a coated tongue, and a foul breath. Ipecacuanha, ℥i, is enough. Do not give antimony. Nausea and vomiting, and irritability of stomach, which is apt to arise, especially in hot climates, are sometimes hard to stop. Bleeding in the cold stage has been found very serviceable by some. One, sometimes two, seldom more, bleedings they say are required. They let the blood flow till some relief is felt, as, usually, liberation from pain of the head and loins, freedom of respiration, departure of the coldness, tremors and debility. Bleeding is not advisable in the cold stage, for it is not required by the symptoms, and it produces debility. In the very outset, however, of the severe malarious fevers of hot climates, on account of the internal congestion and disturbance, blood-letting may, very probably, be the most important part of the treatment.

Hot and Sweating Stages.—In the *hot* stage, bleeding is only necessary when there is danger of internal inflammation. The best remedy of the hot stage is opium. Promote sweating by hot gruel or hot chicken broth; but when the patient's uneasy feelings pass away, cautiously and gradually stop it by wiping him dry, changing his linen, and getting him out of bed. Be not, however, *over busy*.

Intermission.—The most important part of the practice is that to be used during the intermission. The general remedies are bleeding, emetics, and purgatives. Bleeding may be used only when there is a tendency to local inflammation or severe topical congestion, especially in the young and robust. Emetics may be used if the stomach is loaded and foul. Always

purge at the outset, as by calomel, grs. ii or iii; with rhubarb, grs. viii or x, at bed-time; and the next day begin with the specific remedies. The most certain and important are *bark* and *arsenic*. Give every four or six hours sulphate of quina, grs. ii or iii, in the infusion of roses, or with twice as many drops of dilute sulphuric acid, and with 3 i of tincture of orange peel and 3 i of the syrup of the same, completing the draught with water. This speedily stops ague. But sometimes larger doses are necessary. This salt may be given in a pill, but the best is the solution. It appears better to give repeated doses during the intermission, than one large one a short time before the fit. Some quartans, however, seem to require large doses of the sulphate of quina before the fit comes on. In warm climates larger doses are required; and it takes a larger quantity, on the whole, to cure ague. The medium dose, in many parts of America, seems to be eight grains. If the patient will not swallow the quina, or if the irritable stomach rejects it, give it by the rectum. The menstruum should not exceed two or three ounces. A few drops of laudanum sometimes prevent the expulsion of the enema. It is said that the bark in substance sometimes cures when the quina fails. In obstinate cases, give the quina in the decoction of the bark. Continue the quina for ten days or a fortnight after the patient seems cured, gradually diminishing, after the first week, the amount and frequency of the doses. Buzzing in the ear is a sign that the quina has had its constitutional effect; then it should not be pushed further. Sometimes it diminishes remarkably the force and frequency of the pulse. Our American brethren have taught us that quina may be given during the paroxysm with perfect safety and much advantage; and that in the severer remittent fevers, the real hazard lies in abstaining from its use until a comparatively apyretic period arrives. If the quina be stopped too soon, relapse may take place on the eighth day in quotidian fever, on the fourteenth or fifteenth in the tertian or double tertian, on the twenty-first or twenty-second in quartan.

Arsenic has unquestionable power over ague; besides, it is tasteless and, therefore, adapted to children and irritable stomachs. But as it is an active poison and one over-dose may be fatal, or many minute doses may permanently injure the health, it should be used cautiously. If required, however, use it. Ten minims of liquor potassæ arsenitis, (which contain one-twelfth of a grain,) two or three times a day, are a full dose for an adult. It is better to begin with five minims. Do not give this corrosive on an empty stomach. The poisonous effects of arsenic are loss of appetite, nausea; sometimes vomiting, griping pain of the stomach and bowels, and diarrhea, and often, if continued, fainting. Other less constant and less important symptoms are painful and hot tumefaction and stiffness and itching of the face and eyelids, with a red conjunctiva, or a tingling eruption like nettle-rash. Control these effects by a few drops of laudanum to each dose; or better, stop the arsenic, and give mild laxatives, followed by opiates. If bark fails, stop the ague with arsenic, and then use quina to prevent a relapse.

Other remedies are *willow-bark* in substance or decoction and its alkaloid, *salicine*; *holly-leaves* and their alkaloid, *illicine*; the *web of the black spider*, as two pills, each of five grains of the cobweb every two hours, beginning six hours before the paroxysm; this removes not only the ague, but also pain, delirium, vomiting, and griping in ague and continued fever, when there is no inflammation; *charcoal*, especially when there are nausea, flatulence, hiccough, diarrhea, or dysentery, give grains x or xx in arrow root or with a few grains of rhubarb, till 3 ii of it are taken, when the ague is said generally to be cured: the *snuff of candles*; *piperine*, the salt of pepper, in six or eight grain doses; a popular form is a teaspoonful of

pepper in a glass of gin; *chamomile flowers*; preparations of *iron* and of *zinc*, as sulphate of zinc grs. v to x several times a day, or oxyde of zinc grs. iii every three hours. Ague has been cured by strong mental emotion, anger, joy, &c. As the continuance of ague may depend on *habit*, if one fit be cured the disease may cease.

Prophylaxis.—The patient should remove from the malaria, if possible; if not, he should avoid exhaustion of all kinds, sudden exposure to cold or heat, wet clothes, night air; he should sleep in upper apartments, and before going out into the early morning air something should be eaten, or some stimulous or spirits taken. In aguish countries, generous diet and fermented liquor are proper. Moderate doses of quina may be a safe-guard. Warm stomachic laxatives should be used, and not the neutral salts. Protection may be afforded by the *orinasal respirator*, or by a gauze veil over the head, or by a haudkerchief to the mouth, when exposed to the malaria.

LECTURE XLIII.

EPISTAXIS.—This is a simple and, commonly, harmless hemorrhage from the nose. Sometimes it is a remedy, sometimes a warning, sometimes a disease. A slight blow, sneezing, &c., may sometimes cause it. In childhood and early youth it is idiopathic, dependent upon active congestion, probably arterial. In old age it is symptomatic, the result of passive congestion, probably venous. When habitual, its *suspension* betokens disease or danger. It is sometimes vicarious of menstruation or hemorrhoids. It may result from disease of the nares, or form part of a more general hemorrhagic disorder, as purpura. Usually the blood flows *guttatim*, drop by drop; sometimes, in a small stream; sometimes a few drops only fall; sometimes several pints. A moderate flow generally gives relief; a large flow may cause pallor, faintness, exhaustion, even death.

Treatment.—Active idiopathic epistaxis in children, being almost always salutary, may be let alone. If excessive, however, stop it by applying cold water to the forehead and bridge of the nose, and by applying cold substances to distant parts, or sprinkling them with cold water. Besides, give cooling laxatives, and, if necessary, some astringent internal remedy, especially gallic acid and acetate of lead. Powdered matieo leaf snuffed often stops the bleeding. In profuse epistaxis, Dr. Latham, by salivating rapidly, stops profuse and frequent hemorrhage, when moderate blood-letting or purgatives fail. In habitual or oft-recurring cases without any excess of vascular action, or any other apparent ailment in the constitution at large, he salivates gradually and moderately, and continues it for a few weeks. Dr. Southey considers mercury as almost a specific for obstinate hemorrhage, under similar circumstances, from any organ.

When epistaxis *begins* in advanced life, it indicates congestion of the veins of the head, and therefore should be attended to. Look for heart disease or threatenings of apoplexy, and act accordingly. The hemorrhage may be a safety valve for the vessels of the pituitary membrane, which indirectly inosculate with the veins and sinuses of the skull and with the jugular veins. When habitual epistaxis stops, look for and obviate tendency to plethora capitis. When the epistaxis is a part of a general hemorrhagic disorder, as purpura, treat accordingly. If the excessive epistaxis resists ordinary remedies, it becomes a disease. Then plug the bleeding nostril with a dossil of lint wetted with a saturated solution of alum. The

bleeding may be stopped by raising one or both arms above the head for a time.

BRONCHOCELE; GOITRE; DERBYSHIRE NECK.—This is hypertrophy of the thyroid gland, the texture of it becoming coarser, the blood-vessels larger and more numerous, the cells magnified and filled with a thick viscid secretion. It is usually a soft, smooth, elastic tumor, neither painful, tender, nor discolored. Sometimes all the parts are regularly increased, sometimes irregularly. The right lobe is perhaps oftener enlarged than the left. A goitrous tumor may be diagnosed from an enlarged lymphatic gland or an encysted tumor, or a collection of pus, and it may be shown to be unconnected with the larynx, which these are not, by placing the head and neck in different positions, and by its following the up-and-down movements of the larynx during deglutition. Inflammation, acute or chronic, of this gland, and which probably takes place spontaneously in scrofulous persons only, may enlarge it, making it hard, tender and painful. This gland is rarely the seat of cancer; sometimes it is the seat of cartilaginous or ossific deposits. Bronchocele is not painful, nor does it taint the system.

Effects.—By its weight and pressure bronchocele often causes great distress, even death. Its injurious effects are generally in proportion to its bulk. Sometimes there is only a slight fulness of the throat; at other times the tumor may rise to the ear or reach the chest. Sometimes the swelling is rapid, but ordinarily it is slow. The tumor may remain for years without being inconvenient, and then *suddenly* increase. The worst effect is its interfering with the circulation and respiration, causing headache, giddiness, noises in the ears, confusion of thought, and a turgid state of the head and face; or hoarseness, wheezing, and dyspnea. It may impede deglutition. The effects are more serious when it is bound down by muscles which impede its expanding anteriorly. It is much more common in females than in males. In child-bed and at the menstrual period, it may temporarily enlarge.

Time of Occurrence, Causes, &c.—It seldom occurs before the age of eight or ten. It may be congenital, or probably hereditary; it is *acquired*. It is endemic, prevalent in certain localities and scarcely occurring elsewhere. Goitre was supposed to depend on some morbid quality of the air. It abounds in the hollows of many mountainous districts, and in damp, low spots where there is little breeze and a hot sun.

CRETINISM is a sort of idiocy, accompanied by, and doubtless dependent upon, deformity of body, as blindness, deafness, dwarfish stature, large head, crooked limbs, &c. Humboldt shows that goitre does not depend on any particular configuration of the surface of the earth, nor on any peculiar condition of the atmosphere. It is not caused by drinking snow water. It is pretty certain that goitre is caused by drinking water impregnated with calcareous salts. If the salt be sulphate of lime, the remedy is to mix the carbonate of an alkali with the water; if the carbonate of lime, simply boil the water. Where cretinism exists, there is bronchocele; but this may prevail without the former. With four exceptions, cretins are goitrous; but many goitrous persons are not cretins. Cretinism is most common in mountainous places. It is probable that the exciting cause of goitre and cretinism is the same; and that the want of circulation of air, the direct rays of the sun, reflected from the mountain rocks, marsh effluvia, filth, humid situations, are only predisposing causes.

Treatment of Bronchocele.—Advise removal from the infected locality. Iodine is the remedy. The tincture of it is dangerous to use, for the iodine, which is an active irritant poison, subsides to the bottom in aqueous menstrua, and thus no iodine is given at one time and too much at another. Iodide of potassium holds iodine in solution when they are mixed. An

ounce of the *liquor potassii iodidi compositus* (iodine, grs. v ; iodide of potassium, grs. x ; distilled water, O i) is a *safe* dose ; but begin with 3 ii, and increase gradually if need be. Use simple friction, or friction with an ointment containing iodine when its internal use is contra-indicated, or in addition to it. Rub a small portion of the *unguentum iodinii compositum* on the tumor, or paint it with the compound tincture of iodine night and morning. In anemic females, whose eyes are also sometimes prominent, cure the anemia with iron, &c., and if the gland still remain tumid, cautiously use iodine. Watch for the specific ill-effects of the iodine ; headache, giddiness, sick stomach, languor, acceleration of the pulse, palpitation, dry cough, watchfulness, marasmus, sometimes swelled legs, tremors, painful hardness of the bronchocele, diminution of the breast, great increase of appetite. When these occur, suspend or reduce the dose of this medicine. Correct any disordered function, and improve the general health.

Surgical Treatment.—There should be no surgical operation as long as the circulation, respiration, or deglutition is not interfered with and there is no serious discomfort. The surgical operations are three. First, extirpation of the whole organ. This should not be done when the tumor is small ; and when it is large, there is great danger of perilous hemorrhage and injury of important nerves. Surgeons have abandoned this operation. Second, passing a seton through the tumor and breaking it down by supuration. Avoid the large vessels by not going too near the thyreoid cartilage. This has been more successful. Third, tying the arteries which supply the gland. This has been attended with varied success. If there be an enlarged cell or distinct cyst, containing a quantity of fluid, puncture it and let the fluid out. Burnt sponge, containing iodine, is useful. Cover the neck with flannel.

LECTURE XLIV.

CYNANCHE PAROTIDEA.—Greek writers apply the term *cynanche* to inflammatory affections about the throat, and interfering with respiration and deglutition : the Latin term *angina* has nearly the same meaning.

CYNANCHE PAROTIDEA, *mumps*, *branks*, is an inflammatory affection of the salivary glands, particularly the parotid. It is also called *parotitis*, though it is not mere inflammation of the parotid arising from any cause whatever.

Symptoms, &c.—The parotid beneath the ear swells ; the submaxillary and sublingual glands at the outset, or soon after it, are also swelled in most instances ; the swelling then extends towards the chin and is hot, painful, and very tender when touched. Sometimes only one side is affected ; sometimes both at once ; but most commonly, first one and then the other. There is slight fever ; the motion of the lower jaw is impeded by the swelling. The inflammation most always terminates in a few days in resolution, under the antiphlogistic regimen and the application of external warmth. After reaching its height about the fourth day, it declines, its whole duration averaging eight or ten days. It often prevails epidemically, affecting first one or more and then a whole school or family. It chiefly attacks children and the young ; it is contagious ; it seldom attacks the same person more than once. Often when the swelling of the neck and throat subsides, especially when it subsides quickly, the testicles in the male, and the mammæ in the female, become swollen and tender : this is the case, it is said, with the testicle or breast of the *same side* with the inflamed parotid.

Not usually the testicle wastes after the swelling recedes. Generally, the inflammation subsides the same way in both glands, the swelling being neither painful nor long-continued. A more serious but rarer metastasis is to the brain; this takes place sometimes from the parotid, but much oftener from the testicle or mamma. Sometimes it oscillates two or three times between the testicle and parotid.

Treatment.—Observe the antiphlogistic regimen; mild diaphoretics; laxatives, if the head aches or the bowels are costive; warm fomentations or dry warm flannel to the neck and throat. Do not use active measures to *check* or *subdue* the inflammation, lest metastasis to more important organs take place. Do not bleed or purge violently, nor apply cold to the swelling. If suppuration ensue, (which is unusual and unlucky,) use poultices instead of fomentations. When the testicles are attacked, order warm applications and rest in the horizontal posture, or suspend the testicle by a bandage or bag-truss. If the testicle or mamma be very violently inflamed, apply leeches and afterwards poultices. If there be metastasis to the brain, treat for phrenitis, and try to reproduce the inflammation in the parotid or testicle or mamma by irritants, as mustard poultices.

MERCURIAL PAROTITIS.—*Treatment.*—Severe parotitis, induced by mercury, may be treated by leeches, for there is no metastasis of it. There is usually a profuse salivary discharge and also sponginess and swelling of the gums. Probably when there is *no* ptyalism, the parenchyma and areolar tissue of the gland are principally affected; but when there *is*, the lining membrane of the ducts, secretory and excretory, are implicated.

IDIOPATHIC SALIVATION.—*Treatment.*—*Idiopathic*, or *spontaneous* salivation sometimes occurs, the salivary glands being tender and swelled, the flow of saliva copious, and there being the *same* fetor as that produced by mercury, or a fetor which cannot be distinguished from it. Occasionally also the saliva is increased by the preparations of gold, copper, antimony, arsenic, castor oil, digitalis, iodide of potassium, opium, by pregnancy, bad teeth, and by certain states of the constitution.

Treatment.—There is none specific. Astringent washes may do good; a solution of alum, or the infusion of catechu, or a few drops of creasote suspended by mucilage in water. Sometimes the cause may lie in the teeth or a disorder of some important function, which must be treated accordingly.

APHTHÆ.—*Symptoms.*—Aphthæ consist in small, irregular, usually roundish, elevated, white specks or patches over the tongue, cavity of the mouth, and fauces, the angles of the lips, cheeks, palate, pendulous velum, tonsils, pharynx, and contain a serous or gelatinous fluid. The epidermis falls off, leaving a reddish and raw-looking or a foul and ash-colored surface. Successive crops may form. This, in children, is *thrush*. It perhaps never occurs after lactation. The mouth is hot and tender, and pains when the child sucks. Other symptoms in children are drowsiness, sickness, diarrhea, and feverishness. The aphthæ do not exist in the whole alimentary canal, though probably *some* morbid condition does. Improper diet or bad breast milk may cause it. It generally lasts eight or ten days. There is not much danger, unless the separation of the crusts leaves the surface brown or bluish; for in such cases the local affection is apt to run into gangrenous ulceration, and the discharge from the bowels becomes slimy and shreddy.

Treatment of Thrush.—Correct bad diet; and correct acidity of the stomach, which mostly exists in children, by antacids. For diarrhea, give *pulvis sodæ cum hydrarg.*, grs. iii to v, thrice daily, (*pulvis cretæ comp.*, parts ii; dried carb. sodæ, parts ii; hydrarg. eum creta, part i.) Paint the mel boracis on the aphthous parts with a camel's hair pencil.

Aphthæ in *adults*, in the course of other diseases, are often harbingers of dissolution; they denote great debility.

Treatment.—Give wine, bark, and nourishment to sustain the strength. Apply to the parts a mixture of equal parts of mel boracis and syrup of poppies. Use the following mixture as a gargle: borax, 3 ii, melrosæ, 3 i, decoction of quince seed, 3 iii, water, 3 vi. Aphthæ sometimes depend on a bad stomach, produced by food.

CYNANCHE TONSILLARIS; TONSILITIS; AMYGDALITIS; QUINSY; COMMON INFLAMMATORY SORE THROAT.—The severity of this depends on its extent. It generally spreads from the tonsils to the uvula, velum palati, salivary glands, pharynx, root of the tongue, &c. When superficial, it produces no great distress though it be diffused. When it penetrates the mucous membrane, it is apt to cause suppuration; the tonsils swell enormously, and at length contain deep abscesses. The disease is worst when the back part of the tongue or its surrounding muscular and arcolar tissue is implicated. If it reach the larynx it is very perilous.

Symptoms.—Ordinarily, there are at first slight uneasiness and dysphagia, constant dryness and sense of constriction and of a foreign body in the fauces. The tonsils are both red and swell at once or in succession; the uvula is commonly elongated and drags on the parts below, causing painful acts of deglutition; oftener it adheres to the more swollen tonsil. Soon the dryness gives way to a copious secretion of transparent, frothy, and viscid mucus, which is hard to be hawked up. Early in the disease, opaque white spots of exudations, which are not ulcers, appear on the red tonsil. In violent cases the submaxillary and parotid glands sometimes swell and are tender on pressure; occasionally there is profuse ptialism, the salivary glands becoming implicated. When deglutition is painful and difficult, and the cause is out of sight, it is *cynanche pharyngea*; this does not need any further consideration. The pain of tonsillitis is felt almost solely during deglutition and is very severe. The swelled glands often push forward the anterior pillars of the velum palati; they project and approach each other, or they may touch and, by pressure, mutually cause ulceration. The tumid velum palati is apt to drive liquids through the nose in deglutition. In severe cases, pain shoots to the ear along the Eustachian tube; this, in most cases, points to suppuration. Tinnitus aurium and partial deafness sometimes exist from stoppage, by swelling or inflammation, of the same tube. When the root of the tongue is involved, the mouth can be opened only very little, and the tongue is motionless. Breathing is scarcely affected, even in severe cases, but the *speech* is thick, guttural, inarticulate. The voice is often diagnostic. When the swelled tonsils injure the breathing, then, almost only, is there danger. In cynanche tonsillaris there commonly is, from the very outset, smart inflammatory fever; severe headache often; rapid pulse, 120 beats or more. There are little debility and anxiety.

Terminations.—The inflammation often ends by resolution; in violent cases, by suppuration. The former happens when the mucus increases, is less viscid, when swallowing becomes easy and the fever declines; the latter may be looked for, when the inflammation is intense, breathing impeded, when a pulsating pain shoots to the ear, when the mouth can scarcely be opened, or the tongue protruded, when there is more than usual *external* swelling, when the symptoms increase, or do not remit after five or six days. Rigors sometimes accompany the suppuration. Sometimes the pus may lie too deep to be seen. The abscess at length bursts, the pain ceases, the patient can swallow and feel well, and often is nearly so. The pus has a nauseous taste and very fetid smell. Suppuration rarely takes place externally. *Gangrene* is possible in the unhealthy in

scarlet fever, &c. Repeated tonsilitis may make the tonsils large, hard, irregular, with a white or yellow matter often in the hollows, but which is not ulceration.

Diagnosis.—*Cause.*—*Prognosis.*—In *tonsilitis* there is dysphagia only, and the cause of it is visible in the throat; in *pharyngitis* there also is dysphagia only, but the cause is invisible; in *tracheitis* there is dyspnea only; in *laryngitis* there are dyspnea and dysphagia; in *parotitis* there is neither. Tonsilitis often attacks the feeble and the middle-aged, as well as the plethoric and young. There is often a predisposition to it, which sometimes runs in families. Almost the only cause is exposure to cold. It is not contagious. The *prognosis* is almost always favorable. Tonsilitis may spread and cause laryngitis.

Treatment.—In mild cases of superficial inflammation and slight fever, keep the patient in-doors, even in bed; give cooling saline purgatives; follow the antiphlogistic regimen; put flannel around the neck; apply a stimulating embrocation to the throat beneath the ramus of the jaw, as the compound camphor liniment. This does not stop the disease, but leads it to resolution. Both tonsils are usually attacked before the disease is over. In the very outset an emetic may cut it short, as ipecac. ʒi, with tartarized antimony gr. i; give a brisk purge. The only admissible gargle at the outset is warm milk and water. To get rid of the mucus and correct the fetor at certain stages, use detergent gargles, as a weak solution of chlorine in water. In chronic sore throat, use stimulating gargles. In violent inflammation, use a slightly stimulating linctus; it cuts the phlegm, as currant-jelly. The best application to the fauces is the steam of hot water, whether to obtain resolution or assist pre-existing suppuration. A blister outside the throat, applied early, often does good and may prevent suppuration. Better are rubefacients, as the compound camphor liniment or the compound soap liniment, or a mustard poultice between two layers of thin linen. In severe cases, leeches to the throat, just below the angles of the jaw, do good; when there is much outward swelling, and the jaw and tongue are fixed, they are absolutely required. Bleed from the arm if the symptoms require. Do not leech or blister after suppuration. Watch closely when there is dyspnea. If it be caused by the swelled tonsils, pierce them, and the discharged matter or bleeding will give ease. Avoid important vessels and nerves by pointing the lancet towards the centre of the fauces, and not outwards. Besides tying the main vessel, (in case of puncturing a branch,) other means of stopping the hemorrhage are, applying to the part a pencil of lunar caustic, or lint wetted with the muriated tincture of iron, or a saturated solution of alnm. Mr. Bell considers almost a specific, powdered guaiacum in large doses, as ʒss in a draught, suspended by mucilage, every six hours. The chronically enlarged tonsils may cause dysphagia, inarticulate speech, deafness, some dyspnea, even spasm of the glottis and impending suffocation. In this case, pass repeatedly over the tonsils a stick of lunar caustic, or repeatedly paint them with the tinct. iodinii comp.; but better, amputate them, in part at least, by ligature or, better, by scissors. This is not very painful.

LECTURE XLV.

ACUTE LARYNGITIS.—This is inflammation of the larynx, especially of the mucous membrane that covers the laryngeal cartilages and epiglottis. It often extends to the posterior fauces, velum palati, and tonsils.

Symptoms.—These are sore throat; redness commonly of the velum, uvula, and fauces; restlessness and anxiety; dysphagia, and presently dyspnea with no apparent cause; the respiration is throttling; inspiration is protracted and wheezing; the distress is referred to the *pomum Adami*; the cough, if any, is harsh, stridulous, abortive; the speech is hoarse or in a whisper; the laryngeal cartilages are tender; the face is flushed; the skin, hot and dry; the pulse, hard. As the disorder advances, the distress increases; the face becomes pale or livid, anxious, and ghastly; the eyes protrude; the patient calls anxiously for air, and strangles if not relieved. The rima glottidis becomes narrowed or quite closed from thickening, or a swollen state of the lining membrane, caused by inflammation or serous effusion. The blood is poorly aerated and the patient grows drowsy and delirious, and slowly or rapidly strangles. Dysphagia is almost always present and depends on tenderness of the lining membrane, but especially on the erect, fixed and enlarged epiglottis, which permits food and drink to go into the larynx. The epiglottis may be sometimes seen when the back part of the tongue is pressed down, the patient at the same time coughing. The dyspnea is constant, but sometimes it is easier, sometimes aggravated. Fatal cases (which are the large proportion) are so, usually before the fifth day, even in twelve hours.

Diagnosis.—Laryngitis is diagnosed from tonsillitis, pharyngitis and tracheitis by the dysphagia and dyspnea.

Treatment.—Bleed early, if there be high, inflammatory fever, hot skin, full and firm pulse, red cheeks, florid lips; but if the powers are sinking, the skin cold or cool, face pale or leaden, lips blue, pulse small and feeble, mind wavering, do not bleed. Topical blood-letting, when used, should be from the back of the neck by cups, and counter-irritation should be on the upper part of the sternum by blisters; for if either be applied near the laryngeal cartilages, œdema of the glottis may result. In the advanced stage medicine can effect but little. When, from symptoms, &c., it is certain that the cause of the suffocation is laryngitis, and that the tube *below* the larynx is pervious, perform *tracheotomy*. Do not wait too long, nor omit it *merely* because it appears to be too late. Operate while strength remains, before the venous blood poisons the system, and before the lungs become congested. Before operating, explore the lungs, see that aneurism of the thoracic aorta or hysteria does not mislead you. Even if the powers are nearly exhausted, operate; for it will give much relief, and *may* cure, even in apparent death. *Slowly* progressing apnea is worse than *sudden* apnea, for then the lungs and brain are often mortally injured by venous blood. After the operation, the breathing soon becomes easy and the patient calm. Watch lest the frothy mucus from the artificial opening throttle the patient. To get rid of this and the blood, or afterwards to talk, let the patient draw a full breath, then put his finger on the hole for a moment, while he makes an expiratory effort. Tracheotomy is not a very formidable, painful, or dangerous operation. In the case of a child, use the scalpel; in that of an adult, a small curved trocar. First nick the superjacent skin with a scalpel, fix the larynx with the left hand, and with the right thrust the trocar into the thyro-cricoid membrane steadily inwards and downwards. *Mercury* may be given when blood-letting is proper. It is generally too slow, and even if not, it does little good; after the operation it is mostly unnecessary. Do not hazard tartar-emetic, for vomiting may be produced and matter be driven into the open larynx.

Anatomical Characters.—In fatal cases, pus is sometimes found in the larynx, sometimes viscid mucus covering the rima glottidis, sometimes infiltration of the sub-mucous areolar tissue.

Causes, &c.—Laryngitis is a disease of adults, seldom occurring in chil-

dren. The main exciting cause is cold, or cold and wet; other causes are mechanical or chemical injury, mineral acids, and too much ammonia applied to the nose in hysteria, &c. Laryngitis and laryngeal œdema often happen and kill in other diseases, as tonsillitis, erysipelas of the head, small-pox, measles, scarlet fever, mercurial sore throat. Tracheotomy is the remedy, the symptoms demanding it. *Edema glottidis* may occur independent of inflammation. It is *dropsical* often. Tracheotomy, then, is the remedy. There will be dysphagia if the epiglottis be swelled; and if it cannot shut over the glottis, the act of swallowing will be followed by strangling cough and increased dyspnea. *Edema glottidis* does not require blood-letting. Mr. Bush cured by making numerous minute punctures with a sharp-pointed bistoury, every half hour for two or three hours, in the back of the tongue, in the uvula and pharynx, and using warm water gargles in the interim.

CHRONIC AFFECTIONS OF THE LARYNX.—*Symptoms.*—*Treatment.*—The larynx is liable to chronic inflammation, thickening, slow ulceration, necrosis of its cartilages. In thickening and ulceration, the voice is hoarse, croaking; or absent, the cough barking or stridulous, the breathing noisy and painful. In this case, whether of secondary syphilis or common inflammation, gently introduce mercury till the gums rise. While using mercury or local depletion, uphold the strength by nourishing, unstimulating diet, and keep the organ quiet. Swabbing the diseased or irritable part with stimulating application, as a strong solution of argenti nitras, has done good. The larynx is liable to warty growths, which impede the respiration and finally destroy life. Tracheotomy is probably the remedy.

LECTURE XLVI.

CYNANCHE TRACHEALIS—TRACHEITIS—CROUP.—This is violent inflammation of the mucous membrane of the trachea, or wind-pipe; it sometimes extends to the larynx, and often into the bronchi and their tubes. Croup occurs between the period of weaning and puberty—seldom before or after these. It is most common in the second year, especially among male children. The younger the child is weaned, the more liable is it to the malady. It has occurred at twenty-one, and later.

Symptoms.—Tracheitis is often preceded by a slighter and more diffused affection of the lining of the air-passages; the child sneezes, coughs, is hoarse. Hoarseness, says Dr. Cheyne, in very young children, does not usually attend common catarrh. With these the child is feverish, fretful, and sleeps badly. In a day or two the signs peculiar to croup begin to show; difficult breathing; sonorous inspiration, (this is often diagnostic;) hoarseness; a gruff voice, sometimes aphonia; a *ringing* and “brassy” cough, sounding like coughing through a brazen trumpet; a ringing expiration, which, with the cough, is followed by a loud *crowing* inspiration; inflammatory fever; a flushed face; hot skin; frequent hard pulse; thirst; easy deglutition. The rapidity of the disease may help the diagnosis. The brassy cough, or the crowing inspiration, may exist without croup. In the outset, the fever usually runs high; as respiration becomes impeded, the skin grows dusky, the pulse feeble and irregular, the extremities cold; as the malady gets worse, the cough becomes husky, and almost inaudible, the voice sinks to a whisper, the head is thrown back, the dilated nostrils perpetually move, the face becomes pale and livid, and sometimes bloated; the pupils often expand. These signs are usually fatal: the bottoms of the feet turn black and hard; drowsiness supervenes, and tossing of the arms,

perhaps; the breathing becomes gasping, and death follows an *inspiration*. Sometimes the attack is very sudden, the child, previously well, having all the worst symptoms during the night. The attacks, whether sudden or not, usually come on *at night*.

Duration.—Pathology.—Croup is often rapid, being fatal sometimes within twenty-four, often within forty-eight, hours. It may, however, continue five or six days. In circumscribed tracheitis, the membrane peculiar to croup, and called the *membrane of croup*, accumulates in the wind-pipe, and destroys life. It is sometimes expectorated; sometimes in flat, sometimes in tubular, fragments. After death it is found closely or loosely attached to the mucous membrane. It often extends to the air-cells, sometimes into the larynx. What are absurdly called *bronchial polypi*, are casts of the air-cells, formed by this false membrane. Sometimes this membrane is wanting, there being merely redness, tumidity, and viscid mucus, or a shred or two of concrete albumen here and there. Spasm of the small laryngeal muscles may, in part, cause the dyspnea and its characteristic sounds; for there are aggravations of dyspnea, caused sometimes by swallowing. The head is thrown back to keep the cylinder, formed by the membrane, open and from being bent. The membrane of croup is more brittle and albuminous, but less fibrous, than that of serous surfaces; it is not plastic or organizable. That croup and its membrane are peculiar to youth has been explained by the abundance of the white tissue in youth, or by the supposition that the sub-mucous tissue, which is then abundant, is inflamed, and causes them. This membrane may form or re-form in six or seven hours. Croup is not contagious, though many may be simultaneously attacked. It is often endemic, as in cold, but especially in damp places and seasons, such as near seas, rivers, &c. It is exceedingly apt to recur; relapses are very dangerous. The first seizure is generally the worst. Often cough and hoarseness, even aphonia, may stick to the child a long time.

Prognosis.—The prognosis is always doubtful, for it is impossible to know how far down the false membrane extends. About one-half the cases of croup prove fatal. If the breathing becomes easy and the expectoration free, while the strength is yet entire, there is hope; but when the lips are getting blue, the skin losing its heat; when the pulse is feeble and intermitting, and the child is drowsy or comatose, we begin to despair. A few die suddenly, without coma.

Treatment.—There is no specific remedy. Act on the general principles of inflammation. When there are cough and catarrh, especially hoarseness or aphonia, keep the child in the house, on farinaceous diet, and attend to the functions of the bowels and skin. Bleed in the *outset*, when the patient is strong and plethoric, when the symptoms are violent and there is much fever; by venesection or cupping in older children, but by leeches in infants. On an average, two leeches to an infant in its first year produces a moderate bleeding; use an additional leech for every additional year, eight may be put to a stout child five years old, or one or one and a half ounces may be taken for every year of the child's age. The quantity drawn by a leech is variable. Apply the leeches to the upper part of the sternum; for the pressure necessary to stop the bleeding on the throat is not well borne. If the physician can attend himself, it is desirable to apply the leech as near as possible to the affected part. Before repeating the bleeding, try emetics and purgatives. Full vomiting sometimes, even late, particularly early, does much good. It helps greatly to dislodge phlegm and false membrane from the air-passages. The bleeding, if any, should precede the vomiting, for it helps the emetic and lessens the risk from the straining. Dr. West thinks it better to re-excite, from time to

time as required, the vomiting, than to prolong the nausea and faintness which might mask the fatal progress of the disorder. Tartarized antimony is best adapted to our purpose. Dissolve gr. i in boiling water, $\frac{3}{4}$ i, and give a tea or dessertspoonful of it, cold, every quarter of an hour till some effect is produced. If the vomiting does not give perfect relief, give every two or three hours a powder of calomel, grs. ii or iii or iv, with James's powder, grs. ii or iii. Clear out the bowels occasionally with castor oil. Never omit the warm bath. Just after vomiting it is often proper, especially if there is a tendency to perspire. It should not be less than 98° Fahr.; keep the child in it at least ten minutes, and then wipe him dry and put him to bed. The calomel in children causes green, fecal stools, like chapped spinach. The calomel perhaps acts chemically on the bile, thus causing the green color; or perhaps it causes a flow of altered bile. It is questionable whether mercury controls adhesive inflammation of the mucous membrane. In the second stage, Dr. Cheyne recommends grs. ss of tartarized antimony in $\frac{3}{4}$ ss of water to be given to a child two or three years old every half hour till sickness and vomiting ensue. In two hours after the last vomiting the same process is to be recommenced and repeated while the symptoms require and the strength permits.

In the outset bleed, then give tartar-emetic as already described. When vomiting, pallor, and a sinking result, stop the tartar-emetic. If with the rallying circulation dyspnea return, repeat the remedy. If the tartar-emetic cause faintness and collapse, a flying pulse and cold surface, give a few drops of sal volatile, or of brandy in water. If no good is done after two or three repetitions of the emetic treatment, try the calomel plan. If the tartar-emetic acts on the bowels, combine a little syrup of poppies or laudanum. Blisters are not useful, but, if used, put them across the upper part of the sternum. When signs of death appear—livid lips, cold skin, tendency to stupor—and if all else fails, tracheotomy may do good, if there is no false membrane in the trachea or only at its top, which is perhaps the case when dyspnea and much croup come on suddenly. Otherwise tracheotomy is useless, especially as the bronchi and air-cells may fill with serous, mucous, or puriform matter or membranous exudation. The operation is more difficult and the hemorrhage more perplexing in children than in adults.

DEPHTHERITIS is a severe inflammatory disorder of the throat. The fauces are first and chiefly affected. A whitish or ash-colored membrane forms upon the pharynx and tonsils, and extends to the soft palate, into the nostrils œsophagus, sometimes into the larynx, but seldom into the trachea. Around it, between its fissures, and in spots where it has been detached, the parts are deep red, and sometimes purplish or claret-colored. The sub-maxillary and cervical glands are liable to swell, the front neck becomes full and œdematous, and an acrid discharge from the nose is commonly present. There is fever, commonly of a low type. It may be contagious. Dr. West met with it occasionally as an idiopathic disease, but much oftener as a most dangerous complication of some other disease, especially measles. It seldom begins until the eruption of measles is declining or desquamating. There is generally so great a vital depression that active antiphlogistic remedies are contra-indicated. It is a very formidable disease, and generally proves fatal by extension into the air-passages.

Treatment.—Dr. West mainly relies on the careful and repeated sponging of the fauces with a strong solution of lunar caustic (\mathfrak{O} i, aquæ $\frac{3}{4}$ i) and tartar-emetic, as in tracheitis. Mercury, by the mouth, if the bowels permit, or by inunction, and nourishing broths and bark, or wine, early, are important remedies. The morbid condition of the blood, and the character of the fever, forbid the hope of much success from tracheotomy.

CHILD-CROWING; SPURIOUS CROUP; SPASMODIC CROUP.—*Symptoms.*—This and tracheitis, in their most obvious symptoms, are much alike. But in the spurious there is no inflammation or fever, none of the membrane of croup; it comes and goes suddenly; there is much dyspnea, followed by a whistling or crowing inspiration, caused by temporary narrowing of the fissure of the glottis; there is no catarrh, hoarseness, or abiding cough. There are paroxysms of the crowing noise, with intervals of natural breathing. Suffocation may result sometimes in two or three minutes, if the glottis does not open. Sometimes the flexor muscles of the thumb, fingers, wrist, ankle, and toes may contract.

Causes, Effects, &c.—Dr. Ley attributes the temporary closure of the glottis to pressure, made by enlarged glands in the neck or chest upon the recurrent nerve or some part of the eighth pair. Child-crowing is often connected with dentition, excoriation behind the ears, inflamed and irritable scalp, all which may cause glandular swelling. Perhaps bronchitis or lung diseases may have the same effect. The cerebral disturbance is mostly the *consequence*, more rarely the cause, of the impeded respiration. Child-crowing is dangerous. It may result in suffocation; or the brain or lungs or heart may be congested and suffer serious or fatal injury.

Treatment.—This depends on the cause, as dentition, &c. Regulate the bowels and skin. Dr. Wm. Budd cured with grs. v to x phosphate of lime, given thrice daily in chalk mixture. Order fresh air and change of it. In the paroxysm use the warm bath, or apply to the throat a large sponge from which hot water has just been squeezed. Sprinkling the face and chest freely with *cold* water may unlock the spasm.

LECTURE XLVII.

THORACIC DISEASES.—SYMPTOMS OF DERANGEMENT OF THE PULMONARY FUNCTIONS.—*Dyspnea*, difficult breathing, is a deviation from the natural rate of *in* and *expiration*. A healthy adult respires about eighteen times a minute; *i. e.*, about one respiration to four beats of the heart. Dyspnea is caused by a destruction of the just equilibrium between the venous blood and the air, which meet in the lungs to undergo chemical changes. The pulmonary branch of the par vagum is the principal and constant *excitor*; and the nerves of the muscles of respiration are the *motor* nerves, that govern the automatic movements of respiration. The natural stimulus to the pulmonary part of the par vagum is likely venous blood. When the quantity of blood is the same, but the air *too little*, dyspnea results; as in obliteration of the cellular structure of the lungs by solidity of it, or by pressure from fluid in the pleura, or from tumors, enlarged heart, aneurisms, distended abdomen, gravid uterus, &c. The same will result, if the expansion of the thorax be prevented by pain, disease, or rigidity, or palsy of its boundaries; or if the larynx or trachea be narrowed. When the quantity of air is the same, but the quantity of venous blood is *augmented*, dyspnea results; as in brisk exercise, fevers, obstruction to the passage of the blood from the heart into the arteries. Dyspnea may be caused by a peculiar state of the nervous system, or by certain qualities of the blood. So intimately dependent on each other are the functions of the heart and lungs, that disease of one may lead to disease of the other. *Cough* is produced by closing the glottis and then making a sudden and strong expiration; its object is to dislodge mucus, &c., from the air-passages; for this a certain quantity of air and muscular strength

are required. Cough may be prompted by different causes; irritation about the glottis, pressure on the respiratory organs, a long trailing uvula, sympathy with other parts, as the stomach, &c.

Methods of Exploring the Chest.—In investigating thoracic disease, use the eye and hand, as well as the ear; notice the condition and functions of other parts, especially the shape and movements of the thorax and abdomen; learn the previous history of the case. *Abdominal* respiration is that in which the ribs are motionless, and the belly rises and falls with the diaphragm. *Thoracic* perspiration is that in which the abdomen is motionless, but the ribs move. The causes of these are obvious, being any condition that causes pain, or interferes with the action of the part.

Auscultation is the art of distinguishing diseases by listening to internal sounds. If the ear be placed against the body, it is *immediate*; if the sound be conveyed through a conductor, it is *mediate* auscultation.

Percussion is the striking the body itself, (*direct*), or some solid substance (pleximeter, stroke-measurer) placed on the body (*mediate* percussion) to learn the degree of resonance or want of resonance of the part. Solid and inelastic bodies give a dull and flat sound in proportion to their thickness or want of elasticity; hollow vessels, containing air, with thin, firm, elastic walls, give a *hollow* sound, like that of a drum. The human chest being a cavity with firm, thin, tense, elastic walls, and containing spongy lungs, full of air, gives out, when struck, a resonant or hollow sound. But if the lung be solid, or if any solid or inelastic body lie beneath, as the heart, fluid, &c., the sound will be a dead one. The part to be percussed should be as firm and tense as possible. The best position is sitting on a chair. Curtain, &c., do not interfere. In percussing the *front* of the chest, let the arms hang down and the head be thrown back; if the *lateral* part, place the hand of that side on the head and lean to the opposite side; if the *posterior* part, let the arms hang between the legs, lean forward, and incline the head. Bring the ends of the fingers into a line; let the blow be smart, quick, and *perpendicular*, but not too hard, nor should the fingers remain on the part. Compare corresponding parts of the two sides of the chest with each other; intercostal spaces with intercostal spaces, ribs with ribs, by striking them at the same angle, with the same force and *alternately* and during inspiration or expiration, or while the patient holds his breath. Mediate is preferable to direct percussion. The finger, or fingers of the left hand, closely and similarly applied to corresponding parts, is a good pleximeter. A thin, solid, elastic plate may give a more resonant sound. The sound is more resonant during *inspiration* than during *expiration*; in the young, than in adults; in adults, than in the old; in females, than in males; in thin persons, than in the fat; and, they say, in nervous persons, than in others.

Regions of the Thorax.—The following are the regions of the thorax and the sounds they yield, in health, on percussion:—1. *Clavicular*: this answers to the summits of the lungs; at the sternum the sound is very clear; in the middle of the clavicles, clear; at their humeral extremities, dull. 2. *Subclavicular*: this lies between the clavicle and the fourth rib; beneath lie the upper lobes of the lung and, towards the sternum, the large bronchi; the sound is very clear. 3. *Mammary*: this lies between the fourth and seventh ribs; it answers to the middle lobe of the lungs; the sound is clear, but the heart on the left side, and the liver on the right, may somewhat deaden it. 4. *Infra-mammary*: this lies between the seventh and the false ribs; here the thin margins of the lungs lie; the sound on the right is dull, owing to the liver beneath; on the left, tympanitic or dull, according to the state of the stomach which lies beneath. 5. *Upper sternal*. 6. *Middle sternal*. 7. *Lower sternal*. These answer to the upper, middle and lower

parts of the sternum; the sound in all is clear, except perhaps in the inferior part of the last, which may be dull; or, on account of the stomach, tympanitic. 8. *Axillary*: this lies in the axilla, above the fourth rib. 9. *Lateral*: this lies between the fourth and seventh ribs; in both these, resonance is clear and distinct. 10. *Lower lateral*: this lies below the seventh ribs; the sound on the right is dull, owing to the liver on the left; at times very hollow, owing to the stomach. 11. *Acromial*: this occupies the top of the shoulder, between the clavicle and superior spine of the scapula; the sound is dull. 12. *Scapular*: this occupies the space covered by the scapula; it answers to the middle lobe of the lung; the sound is dull, unless a pleximeter be used. 13. *Intra-scapular*: this lies between the edge of the scapula and the spine; it answers to the roots of the lung and the middle parts of their lower lobes; the sound is clear, as also along this part of the ridge of the spinal column. 14. *Dorsal*: this lies over the lowermost part of the ribs behind; it answers to the base of the lung; the sound is clear; the liver may make the lower part, on the right, dull; the stomach may make the left unduly resonant. If, where a hollow sound should exist, there is found a dull one, then there is not the natural quantity of air beneath; if a tympanitic sound, too much. But what may be the causes of these, auscultation must tell.

Auscultatory Sounds in the Chest.—The sound in the healthy lungs, produced by the ingress and egress of air, is called the *respiratory murmur* or *vesicular breathing*; it is rather a rustle, like the sighing of the wind in the branches of a tree, or like the sound of the deep inspiration of a sleeping person, or like the soft murmur of a pair of bellows, of which the valve does not click. The *entrance* of the air is much more noisy than its *exit*, which sometimes can scarcely be heard. The murmur is much more loud and distinct in children than in the grown; in the lean, than in the fat. An unusually noisy breathing in adults is said to be *puerile*, for it has the character of the respiration of a child. Why, in one of two healthy and equally fat persons, the murmur is very loud, and in the other very feeble, but *increased* during a deep inspiration, is not well understood. Peculiarities of circulation may have some effect. *Bronchial breathing*, which accompanies the outward and inward passage of the breath through the trachea, is a blowing noise, like that of air rushing through a large tube. If the breathing is not heard where it should be, the subjacent part of the lung is solid, or there is some obstacle in a large bronchus keeping the air out, or air is there stagnant, or there is liquid in the pleura. In this case, if percussion give a hollow sound, there is stagnant air in the lung or pleura; but if a flat sound, the lung beneath is solid or liquid is in the pleura. The voice passes inward through the trachea and bronchi into the lungs. When the stethoscope is placed over the trachea, the voice sounds as if it came from and through the instrument. This same, heard elsewhere, is a sign of disease and is called *pectoriloquy*. When it sounds like one talking into a tube, the words being indistinct, it is *bronchial voice*, or *bronchophony*. When it is attended also by a twanging vibration, a cracked, discordant tremor, like the bleating of a goat, it is *agophony*. The same may be said of the cough. It may be so modified as to indicate the state of internal parts. *Succussion* is the giving a sudden jog to a patient to detect air and water by the splashing sound. In most persons, when they speak, the hand placed on the chest feels a thrill; if this is felt on one side only, there is disease. The best positions for percussion are also the best for auscultation. The stethoscope, if used, should be evenly applied.

LECTURE XLVIII.

CATARRH.—Healthy mucous membrane is always moist. Inflammation renders it at first dry, tumid, swollen, thick, redder, and gives rise to uneasy sensations, as heat, fulness, itching. Pain is not common. *Catarrh* is inflammation of the mucous membrane of the air-passages; in the frontal sinuses, it is called *gracudo*; in the nasal cavities, the defluxion being large, *coryza*; in the lungs and trachea, *bronchitis*, *cold in the chest*, *cough*.

Symptoms.—In *coryza*, the nostril is at first dry and swelled, making it difficult to breathe through the nose; smelling is injured; the part is red, tender, irritable. If the inflammation extends into the frontal sinus there are headache and oppression. If the conjunctiva is also affected, the puncta lachrymalia become impervious, and the tears flow over the cheeks. There is with all this some shivering or chilliness, and the pulse, especially in the evening, is a little more frequent than common. There is slight fever. After a time a thin, serous, acrid fluid, is secreted, which reddens and frets the parts over which it flows. At length this fluid becomes thick, viscid, and yellow, and the parts return to their healthy state. This is *cold in the head*. The inflammation may travel down to the lungs, or up from the stomach; or it may go to the Eustachian tubes and produce deafness; or to the gullet and stomach and cause qualmsiness and loss of appetite.

Dry Sounds of Respiration.—*Moist Sounds.*—The same conditions take place in the bronchial membrane. It gets first dry, tumid, irritable; the chest feels tight, stuffed; there are some hoarseness, roughness, and soreness in the wind-pipe, and a dry cough; sometimes pains in the limbs, like those of rheumatism; appetite is impaired; there are thirst and general lassitude. When the lining of the bronchial tubes and their branches is preternaturally dry and tumid, we have the two dry sounds, *rhoncus* and *sibilus*. The first is a snoring noise, like the cooing of a pigeon, or the bass note of a violin, or the droning hum of an insect flying; the second is a hissing, or wheezing, or whistling sound. The former belongs to the larger divisions of the bronchi; the latter, to the smaller tubes and vesicles. In *rhoncus*, the tubes are partially narrowed, mostly by half-solid mucus, for the *rhoncus* can almost always be removed by a strong cough. But a tumor or tubercle may flatten a tube, and cause permanent *rhoncus*. A trembling is often felt by the hand, when the sound is deep and grave, which is in proportion to the length and diameter of the tube. *Rhoncus* usually implies no danger. *Rhoncus*, being a loud sound, may be distinctly heard over one, and obscurely over the other side of the chest. *Sibilus* abolishes the respiratory murmur; both cannot exist simultaneously in the same tube. In *sibilus*, the tubes are narrowed by the tumid membrane; it cannot be coughed up. *Sibilus* always bespeaks danger, but most especially when heard over the whole chest. *Rhoncus* and *sibilus* may occur alone, or together, and with the respiratory murmur. It is just possible that *sibilus* may proceed from a large tube very much narrowed. When the inflammation is confined to the mucous membrane, percussion gives about a natural sound. *Rhoncus* and *sibilus* belong to the *breathing* only.

Moist Sounds.—After a while a glairy, saltish, transparent fluid is poured out, which is stringy in proportion to the intensity of the inflammation, and frothy, *i. e.*, contains much air, if brought up after much coughing. Air, passing through this liquid, forms bubbles, which burst and give rise

to the two *moist* sounds, called *large* and *small crepitations*. The former belong to the larger tubes, and the bubbles are large; the latter, to the smaller tubes and cells. In the former, vesicular breathing exists *beyond* the liquid, though perhaps not audible on account of the crepitations. This state is not dangerous. Small crepitations *abolish* vesicular breathing, and, if extensive, are dangerous. When sibilus and small crepitations are considerable, there are much distress, dyspnea, and cough, and the fever is at its height. By-and-by the expectoration becomes opaque, yellowish, is more easily brought up, the crepitations diminish, perhaps rhoncus appears, and soon all is natural again. Whatever *kind* the liquid be, the sound is the same.

Causes of Catarrh.—The ordinary cause of catarrh is cold, especially cold and wet applied to the mucous membrane, but more especially to the skin. The ordinary forms run their course in a few days, if the patient abstain from animal food and liquor, and avoid re-exposure.

Treatment of Catarrh.—Keep the patient in the house, even in bed; let him live on slops; give a gentle aperient, then diaphoretics: James's powder in small doses; liquor ammoniac acetatis \mathfrak{z} iii with spiritus ætheris nitrici \mathfrak{z} i, and camphor mixture \mathfrak{z} i; or a saline draught, with an excess of alkali, and a few grains of nitre, or a little antimonial wine, three or four times a day, and Dover's powders grs. iv or v, and put his feet and legs into a warm bath, just before going to bed. Sometimes an incipient catarrh may be cured by sending the patient to bed and giving him a beaker of hot wine negus, with a tablespoonful of the syrup of poppies in it, or a few drops of laudanum, unless he is plethoric, or tends to inflammatory disease. Sometimes a good dinner, and an extra glass or two of wine, may, after the fever is over, and expectoration is thick and loose, "speed the going guest," but this plan should not be tried by delicate or phthisical persons, or by those prone to inflammation. Dr. Williams says that his dry plan, if begun at the outset, cures in about two days. It consists in cutting off the watery supply from the blood by drinking no liquid, or at most only \mathfrak{z} ss morning and evening, and a wineglassful at bed-time. * Confinement to the house is not required, but only warm clothing.

Prevention.—This may be effected by the shower-bath, at first tepid, then cold, and begun in summer; it may be continued during winter; or cold sponging may be used.

ACUTE BRONCHITIS.—The inflammation of the lining membrane of the air-passages and vesicles may be intense and diffused, occupying the whole membrane of one, or both sides, and being thus very dangerous. The first or dry stage may linger for some time and subside. But, in the great majority of cases, glairy mucus is soon poured out, giving rise to crepitations. The expectoration is transparent, flows in one tenacious mass, and draws out like melted glass; the degree of viscosity is a tolerable measure of the degree of the inflammation. The mucus may be frothy, or streaked with blood. With this kind of sputa, *crude*, the inflammation is intense, fever and dyspnea considerable. When resolution approaches, there are in the sputa masses of yellow, white, or green, and then the whole becomes the same; inflammation is subsiding, (*concocted*, or *ripe*.) There are varieties in the sputa at the end of an attack of acute bronchitis. If the opaque and parti-colored sputa goes back to its transparent sticky frothy state, it is a certain index of a return or extension of the inflammation. The sputa of each distinguishes bronchitis from pneumonia. When bronchitis ends fatally, the lips, cheeks, and tongue, become purplish; there are livid paleness and anxiety; delirium comes on and rapid sinking; profuse cold clammy sweats ensue, and death by apnea; the bronchial secretions in the tubes, large and small, choke the patient.

Anatomical Characters.—After death, the lungs, when exposed to the air, does not collapse; the trachea and bronchial tubes are filled with mucus, and the membrane is red and thickened.

TREATMENT OF BRONCHITIS.—If there be much fever and dyspnea, a hard pulse, especially if the patient be young and strong, bleed from the arm. Bleeding relieves the symptoms, though it may be injurious. As in the advanced periods strength is required to get rid of the phlegm, be cautious about bleeding. Cups to the chest or between the scapulæ are safer, and not less effectual, than venesection. The amount to be drawn, and the question of repeating the cupping, are determined by the pulse. Clear the bowels by a mercurial purge, as calomel and jalap; then give tartar emetic to nauseate; if it cause vomiting, continue it *after* the sickness. With the antimony, *i. e.*, during the same period, give mercury. If sinking and debility appear, give stimulating expectorants, as carb. ammoniæ, grs. v or vi, in solution, every four or six hours. Do not give opium in a full dose to force sleep or allay cough, if the complexion be dusky and the lips anyway blue. When the lips and cheeks are florid and the first violence of the disease is over, an opiate will do capital service, as laudanum, ℥ xx, with vinum antimonii tartarazati, ℥ xx; or acetate of morphia, gr. ½, with oxymel of squills, 3 i. The cough and dyspnea are often relieved by a large blister across the chest, or quicker, by the mustard poultice. Inhalation of the steam of hot water is also useful.

CARNIFICATION OF THE LUNGS.—If the inflammation spread to the lungs we have other physical signs, and should modify our treatment. Portions of the lung are apt to be *carnified*; they are exhausted of air by tough mucus which is driven into one or more tubes during respiration or coughing. The empty parts are firm, tough, dry, dull red, their cut surface resembles muscle, and they sink in water. When considerable it is *diffuse*, when limited *lobular*. When considerable, or even when limited, if it comes on suddenly, the breathing is apt to be laborious; inspiration is difficult, but expiration easy. The patient cannot lie down, and suffocation threatens. Collapse of the lung modifies the sound on percussion. Percussion gives a hollow sound in the sudden cases. Emetics and inhalation of steam may do good in these cases.

PERIPNEUMONIA NOTHA—CATARRHUS SENILIS.—This is chronic bronchitis, with sometimes an enormous secretion from the pulmonary mucous membrane, and occurring in the old, and very apt to be converted into pneumonia or aggravated by exposure. There are periods of slight febrile attacks and exacerbation of the complaint; pain in the breast and side, headache, heat, thirst, and aggravated cough and expectoration. Pneumonic inflammation in these cases is often set up suddenly. The lung which crepitates to-day may be solid to-morrow. The *sudden* spoiling of a small portion of lung often kills, for, ordinarily, the patient has only just enough effective lung to sustain life.

Treatment.—Here we are in a dilemma. If blood be not taken, the unchecked inflammation may kill; if it be, the patient may be so weakened as to be unable to expectorate, and so suffocate. We must chiefly trust to cupping and blisters, and to expectorants, and perhaps emetics, and to medicines which are at the same time diuretic; spiritus ætheris nitrici, the preparations of squills, and of digitalis.

LECTURE XLIX.

INFLUENZA—GRIPPE.—This is a species of catarrh, with sudden decided febrile disturbance at the outset.

Symptoms.—The symptoms are: chilliness, perhaps shivering; headache; a sense of tightness across the frontal sinuses; tender and watery eyes; sneezing and a copious acrid defluxion from the nose; heat and uneasiness about the throat; hoarseness; a troublesome cough; dyspnea—a sudden, early and great subdual of strength, and generally great depression of spirits. The catarrhal symptoms are rarely absent. The stress of the disease generally falls on the mucous membranes, especially of the air-passages. The lining of the alimentary canal is almost always affected also, but in a less degree. The tongue is white and creamy, the palate loses its sensibility, appetite fails, nausea and vomiting are common, sometimes there is diarrhea. The pulse is soft, generally weak; the skin, at first hot and dry, soon becomes moist, and sometimes exhales a peculiar musty smell; pains are felt in the limbs and back, and a bruised, tender soreness along the edges of the ribs, and elsewhere. If simple, the disease abates of its violence after two, three or four days; but cough and much debility are apt to survive and render relapse easy. Pre-existing disease, peculiarities of constitution, &c., modify the disorder. It is apt to be complicated with bronchitis, pneumonia, rheumatism of the joints, neuralgic pains.

Causes.—*Progress.*—Influenza is not likely contagious; it may be somewhat infectious; it is, very probably, caused by something material and portable; and is surely connected with a peculiar, but unknown state or contamination of the atmosphere, and not, likely, with any variation of its temperature, motions or moisture. *Epizootic* diseases have occurred with epidemic influenza. Epidemic catarrhs travel, and that generally in certain directions and in opposition to winds, &c. The course of influenza is generally westerly or northwesterly. It is most violent at the commencement of the epidemic; abates and is most over in six weeks; still, like other epidemics, it may attack strangers, or again appear in a milder form, the primitive cause still lingering, but modified. Some attribute influenza to a change in the electrical state of the air. A most plausible conjecture is that it is caused by an excess of ozone in the air. It is supposed by some, that animal, or vegetable living substances in the air may be the cause. Some think its definite course is connected with magnetic currents. Influenza is often trifling; sometimes serious, especially in the old and unsound; it sometimes lays the foundation of more serious, but more chronic diseases.

Treatment.—Bleeding is not well borne. If the pleura or substance of the lungs becomes inflamed, if necessary, bleed or apply cups to the chest, but cautiously. The best plan is: Keep the patient in bed, and after clearing the bowels by grs. ii to iii of calomel followed by a mild aperient, give James's powder grs. ii, every six hours, with a saline draught, and slops till the first stool is over; then, if the cough be troublesome and the breathing laborious, and much rhoncus or sibilus or crepitations exist, apply a blister and give expectorants and diuretics; oxymel of squills 3 ss, sweet spirit of nitre 3 i, and sometimes another draught of paregoric, in almond emulsion. Use opium or not, after feverishness is abated, and headache gone, as in the last lecture. When the powers of the system are prostrate, the face and lips livid, and expectoration difficult, give ammonia,

nourishing broths, perhaps wine and water. When danger is past, but the patient is feeble, languid, and out of spirits, administer tonics; as snake root, casearilla, especially sulphate quinae or of iron. Mustard poultices, blisters, &c., and inhalation of steam of hot water may be useful—see the last lecture. Dr. T. Davies, noticing in bad cases crepitations in the lower lobes of the lungs, cures by quickly touching the gums by rubbing in linimentum hydrargyri.

CATARRHUS ÆSTIVUS—HAY-FEVER—HAY-ASTHMA.—This is a combination of catarrh and asthma. *Symptoms.*—Excessive irritation of the whole of the air-passages, causing itching of the eyes and nose, paroxysms of sneezing with a copious defluxion from the nose, pricking in the throat, cough, tightness of the chest, dyspnea and perhaps much expectoration. It occurs in the hay season, from some grassy emanation, probably from the *anthoxanthum odoratum*.

Treatment.—Avoid the cause. The tincture of lobelia inflata has done good; cold shower-bath may prevent attacks; especially the sulphates of quinae and of iron combined. Tinctura nucis vomicæ, D. P., appears to have done good in ten minim doses thrice daily. Three to five minims of liquor potassæ arsenitis in distilled water immediately after each of the three daily meals, acts wonderfully well. Tendency to this disorder runs in families. The chloride of lime or soda, sprinkled or put in saucers about the room, used in washing the hands, &c., or in a bottle to smell, often gives relief.

The powder of ipecacuanha produces symptoms like those of hay-asthma, with singular anxiety and great weakness, which usually terminate by a copious mucous expectoration. *Try the respirator.*

CHRONIC BRONCHITIS—CHRONIC CATARRH.—This is chronic inflammation of the lining of the air-passages. It is often a sequel of acute bronchitis; it often attends heart disease, the febrile exanthemata, continued fever, and is apt to be mistaken for tubercular consumption.

Symptoms.—The constant symptoms of chronic catarrh, or bronchitis, are cough, some dyspnea, expectoration of altered mucus; the most important variable ones consist in the quantity and quality of the expectoration, and the presence or absence of wasting and hectic fever. An elderly person, for instance, has a slight cold in winter, coughs, expectorates grey or transparent mucus: these disappear in summer but reappear in winter, each time with increased severity. With the cough there are crepitations in the lower part of the lungs. These may result from chronic inflammation, or perhaps from passive congestion and effusion, depending on slow cardiac disease. Peripneumonia notha is often apt to supervene. But chronic bronchitis may, at any age, be a sequel of the acute and resemble phthisis. It is sometimes as fatal as phthisis. If there be no organic change in the tubes or their lining, it is curable.

Treatment.—Counter-irritants to the chest, and measures to relieve symptoms; opiates for cough or diarrhea; sometimes steel or sarsaparilla does good; especially frequent change of air, carriage and boat gestation; nourishing and unstimulating diet. But if there be organic change, and a fluid like pus is poured out, hectic fever is generally present and death surely follows.

Another form of chronic bronchitis is, when a large amount of frothy fluid, like gum-water, is spat up with sometimes no other signs of inflammation, no fever, no frequency of pulse or heat of skin, the patient becoming blanched and emaciated.

Treatment.—Creasote may do good; also balsams, as the compound tincture of benzoës; also when there is no fever, the sulphate of iron, in the compound infusion of roses, in two or three grain doses, is very serviceable.

Another species of chronic inflammation is that in which false mem-

brane, some parts solid, some tubular, are coughed up. When extensive, there are much distress, dyspnea, and coughing. Fatal cases rarely if ever happen. Dr. Todd's opinion, which is probably true, is that the tubular membrane is first poured out; that then this separates and causes hemorrhage, some of the blood becoming coagulated and forming solid cylinders.

Pathology.—Chronic inflammation of the mucous membrane may change its color to livid, or brown, or, after *puriform* sputa, to white. Or it may lead to softening, but less often in the bronchi, than in the digestive organs; or to ulceration, but rarely in the air-passages; or to thickening, or to *dilatation* of the bronchi and their ramifications.

There are three kinds of dilatation in the air-tubes, produced by disease: 1. One or more bronchi or one or many branches, are dilated and thickened in their whole extent, or partly. 2. A globular expansion, with thinness of its walls, is found at the end of one tube. In it a thin, tenacious, muco-purulent fluid is generally found. Straining in coughing is the cause. 3. A bellying out of the same branches in different spots, from mucus, with thinness of its walls. This occurs oftenest in children. These dilatations compress the neighboring lungs, and, if extensive, cause habitual dyspnea. The signs, general and physical, of dilatation are apt to be those most distinctive of phthisis.

LECTURE L.

HOOPING-COUGH, PERTUSSIS, CHIN COUGH, KINKHOAST, COQUELUCHE, TUSSIS, CONVULSIVA, TUSSIS FARINA.

Symptoms.—This begins with the ordinary symptoms of catarrh, coryza and cough. After this catarrhal stage has lasted eight, ten, fourteen, or sixteen days, then comes on the distinctive cough, which consists of several rapid and violent *expiratory* coughs, with at length one long-drawn hooping, or *erowing inspiration*. Similar paroxysms of short *expiratory* coughs, with one shrill *inspiration*, continue alternately till a glairy mucous expectoration or vomiting or both take place. The hooping inspiration is caused by the narrowed rima glottidis. During the paroxysm the child's face becomes swelled and red, or livid, or black; his eyes start, he elings for support to objects near him. After the expectoration or vomiting, the child is gay as ever, and, after vomiting, generally very hungry. Each paroxysm may consist of several coughs, with a hoop; the number of them during the twenty-four hours is variable, and the intervals irregular. It is more common at night. At first the mucus expelled is scanty and thin, and the fits long and violent; by degrees it becomes more abundant, and thicker and more easily brought up, and then the fits are shorter.

Duration.—*Auscultatory Sounds, &c.*—The disease usually lasts from six weeks to three months; but it may last only three weeks or continue six months. During the intermission, in uncomplicated cases, auscultation probably detects some rhoneus or sibilus, and puerile respiration; and percussion gives the natural hollow sound. During the paroxysms and between the short coughs, some wheezing or vesicular breathing is perhaps heard; but during the long inspiration, all *within* the chest is silent, owing likely to the small amount of air admitted through the narrowed rima glottidis, and perhaps spasmodic bronchial tubes. After the fit, the healthy or catarrhal sounds are heard. Hooping-cough is contagious; very rarely attacks the same person twice; is rare among adults, because, though sus-

ceptible of it, most of them have had it whilst young. Children have been born with it.

Prognosis.—*Complications.*—*Consequences.*—*Anatomical Characters.*—When there is no inflammation, or that only proper to mild catarrh, it is not *dangerous*; it will probably run a certain course, decreasing in violence and frequency, occurring only in the morning and evening, then only in the evening, then ceasing. But after-coughs may resemble that of whooping-cough. Severe bronchitis or inflammation of the lungs may supervene on pertussis, and then there are fever and permanent dyspnea. In fatal cases, dilatation of the bronchi is often, or emphysema of the lungs oftener, found, and still oftener pulmonary lobular collapse. Cerebral disorders often result from the passive mechanical congestion caused by the straining. Hemorrhage from the nose or ears, blood-shot eyes, convulsions, apoplexy, or fatal chronic hydrocephalus, may result. The younger the child, especially if scrofulous, or during first dentition, the more danger. During the first two years convulsions are usual, and more die than afterwards. Disorder of the bowels or remittent fever may add much to the peril. It is doubtful if there ever is pertussis without the characteristic cough. It is conjectured that the *crowing* in pertussis may depend on irritation of the pneumogastric nerve caused by glands enlarged by a specific animal poison. In fatal cases, enlarged bronchial glands have been found; sometimes fluid in the cerebral ventricles or pia mater, or traces of inflammation in the bronchi, lungs, or pleura, or hepatized lung.

Treatment.—As simple pertussis runs a certain course, *keep it simple and conduct it safely.* Obviate injury to the chest or head. Shorten and ease the cough. Regulate and reduce the diet; prohibit meat; keep the bowels moderately open; protect from cold weather by clothing, &c., allow but little meat. *Ward off inflammation and quiet irritation.* Give ipecacuan. gr. i, or i ss, three or four times a day; this generally keeps the bowels open and acts on the mucous membrane; or a few grains of rhubarb and ipecacuan. every night. If the cough is urgent, give small opiates, syrup of poppies; or the extract of hyoscyamus, as many grains *a day* as the child has years. Or mix tartarized antimony gr. i, laudanum gutt. xx, in water $\frac{3}{4}$ i; of this give a tea, or dessertspoonful every evening or every other evening. Or, especially if expectoration is difficult, give an emetic every day, or three or four times a week; the best is ipecacuan., and the best time for giving it is the evening. After vomiting, every fourth hour for several days, laudanum, gutt. i, ipecacuan. wine, gutt. v, carb. sodæ, grs. ii, have been given in a draught. If the cough continue after recovery, order change of air or the shower-bath and iron. Prussic acid and the extract of belladonna are gigantic remedies; if used, let it be in very small doses, and watch their effect. The artificial tincture of musk, η iii-iv in the outset does good sometimes; increase the dose till some effect is produced, and then continue the same dose. Alum, grs. iii or iv, every four or six hours, has apparently done good when there has been much expectoration, and no fever. Digitalis and cantarides are hazardous. Cochineal, oil of amber, musk, camphor, and the meadow narcissus are safer; carbonate of iron may do good. Frictions to the spine and chest may do good; do not use tartarized antimony: it may cause bad sores. Roche's Embrocation (olive oil one part, oils of cloves and of amber one-half) is used by many mothers. If there be inflammation in the chest, as shown by the *fever and permanent dyspnea*, use antiphlogistic *remedies and regimen*; leeches to the chest; venesection, if the child can bear it; tartar-emetical; small doses of nitre; warm bath; blistering; small and repeated doses of mercury, if required; hydrarg. cum creta or calomel, according to the state of the bowels. Permanent dyspnea without fever oftener depends on collapse than on inflammation of the lungs.

Then, as active antiphlogistic remedies are hurtful, auscultation must guide us. When there are head symptoms of hydrocephalus, or apoplexy, squinting, convulsions, stupor, treat for those diseases; leeches and cold to the head, purgatives, warm bath.

PNEUMONIA is inflammation of the *substance of the lungs*, of *all the textures* of the part.

Stages.—There are three conditions of the lungs, corresponding to the periods of inflammation. 1. *Engorgement.*—The lung is gorged with blood or bloody serum; is less crepitant, heavier, and more inelastic than natural. The cut surface is red and pours out red, frothy serum; the lung is dark red externally; is easily torn like the spleen, (*splenization* of the lung;) the lining of the small bronchial tubes is deep red; the engorged parts almost always float on water. Remember that, just before and after death, the undermost parts of the lungs often become *mechanically engorged* without any previous inflammation. 2. *Hepatization.*—The lung is red externally and within; does not crepitate on pressure; is solid; sinks in water; its cut surface is uniformly red or slightly mottled; resembles cut liver, (*hepatization*;) pours out some, not foamy, fluid; and, when scraped, shows yellow matter, (*commencing suppuration*;) and is more friable than before. If the entire lung is involved, it is swelled and does not collapse. Pneumonia, limited to certain lobules, is *lobular pneumonia*. 3. *Purulent Infiltration, Diffused Suppuration.*—The solid lung is reddish yellow or grayish, sometimes mottled with red or black, is very friable and full of puriform matter which has no smell. Abscess of the lung in pneumonia is very rare, probably because the admitted air causes suppuration to supersede adhesive inflammation. *Gangrene* sometimes, but rarely, results from acute inflammation of the lung; it is more common as a primitive disorder. Sometimes it is extensive, sometimes limited; the part is dark greenish, brown, wet, soft, and stinks horribly.

Seat Complications.—Pneumonia may affect both lungs at once or only one, generally the right; or it may affect the part or whole of one lung, generally the lower lobes, and travel up to the superior lobe. The lining of the air-passages are red in the part affected. Pneumonia never exists without bronchitis, and not often without pleurisy; this last is *pleuro-pneumonia*.

Auscultatory Sounds.—Auscultation, in the state of engorgement, detects *minute crepitations*, the *crackling of pneumonia*; *i. e.*, very small erepitations, which sound like salt crackling on a fire, or like rumpling fine parchment, or rubbing one's hair near the ear. The crackling may entirely abolish vesicular breathing; this shows that the inflammation is passing to the second stage. It does not last *long* in one spot. It proceeds from the minutest air-tubes and air-vesicles. It disappears and leaves the lung solid, but the larger bronchial tubes pervious. Then no sound is heard, but the chest heaves up; or oftener there are *bronchial respiration* and *bronchophony*. The former sounds like blowing through a quill: it is produced by air going into and out of the pervious bronchial tubes, and is heard through the solid lung; the latter is an unnaturally resonant humming, muttering sound, with the words indistinct, like one speaking through a tube, and exists under the same state of the lungs as bronchial respiration.

LECTURE LI.

PNEUMONIA—*Continued.*—*Auscultatory Sounds.*—The bronchial voice and respiration are more marked, the greater the number and size of the tubes in the hepatized part, as in the upper and central parts, roots, of the lungs and near their surface—in the lower parts and their surfaces, especially if partial, these sounds may not be heard at all. If hepatization be such as to prevent expansion of the chest, no bronchial *respiration* is heard, but *bronchophony* may remain. With the bronchial respiration there is usually dulness on percussion. If a portion of permeable lung, even thin, intervene between the inflamed part and walls of the chest, a resonant, but not exactly natural, sound is given out on percussion; but if the hepatized part come close to the ribs, the sound will be flat or dead. With all this, in the sound lung, or healthy parts of the inflamed lung, *puerile respiration* is heard, showing that a part is spoiled and the rest is compensating for the deficiency. When bronchial breathing only is heard, it is a state of painful interest. When the hepatized lung is reverting to the state of health, the bronchial voice and breathing are gradually superseded by crepitations, and these, in their turn, by the vesicular murmur. The crepitations, which linger for a while at the end of a full inspiration, are likely owing to some œdema of the lungs. Moreover, the crepitations of *returning* health are coarser and less regularly diffused than those of *advancing* pneumonia. Auscultation does not inform us whether the lung remains in the second, or has passed to the third stage. But if a portion of lung breaks down and is expectorated, air entering the vacant spot gives rise to large *gurgling* respiration. The three degrees of pneumonia may exist in different parts of the same lung, each yielding its peculiar sounds. Sometimes, though it exists and the lung expands much more strongly than natural, auscultation can detect nothing of pneumonia when it is partial and deep-seated, or sometimes when it is *lobular*.

General Symptoms.—The *general* signs of pneumonia are, a pain or a stitch, more or less severe, on one side of the chest; dyspnea; cough; a peculiar expectoration; and fever. The disease may succeed insidiously to bronchitis, and that with or without the sharp pain or stitch. The *pain* appears to exist only when there is some pleurisy also. It may exist in any part of the thorax, but most usually on a level with, or a little below one breast; it is generally most severe at the outset, and ceases before the pneumonia; is increased by cough, full inspiration, often by sudden change of posture, by pressure, percussion; or its place may be occupied by a sense of trouble, tightness, weight, or heat. The patient cannot lie on the painful side. *Dyspnea* is greater when the patient lies on the sound side; it is generally proportionate to the extent and severity of the inflammation; is greater when the upper lobes are inflamed; is sometimes very slight; sometimes so extreme that the patient cannot lie down, can scarcely speak, becomes livid, red, or pale in the face, &c.; from this the patient seldom recovers. This laborious breathing denotes that bronchitis is added to pneumonia. Delirium often occurs from venous blood acting on the brain. It is an ugly symptom. The *cough* is not peculiar, nor in paroxysms; is generally dry at first, and in a few hours accompanied by peculiar sputa. The *sputa* of pneumonia is transparent, *rust-colored*, trembling, and very viscid, from the admixture of *blood*. If this sputa flows out of a tilted vessel, we may *hope* the first stage exists; but if it cannot be shaken out, we must *fear* the second. Pneumonia may exist without

this sputa; but this perhaps not without pneumonia. If the disease gets worse, this sputa may continue to the end; though commonly there is *less* of it then, or none at all, or, on account of its viscidty, or the patient's debility, it cannot be got up. It then suffocates. In advanced stages, it sometimes has the consistence of gun water, and the brownish red color of plum juice. Sometimes in the third stage pus is excreted. Sometimes there may be very little sputa, or only like that of catarrh. The sputa of gangrene is greenish, or reddish, or dirty gray, and fetid. The puriform expectoration of circumscribed pneumonic abscess is also very fetid.

Course of Pneumonia.—The first symptoms of pneumonia commonly are, pain in the side, preceded, or not, by rigors, dyspnea, cough, without expectoration, minute crepitations, clearness on percussion and fever. From the second to the third day comes on the characteristic sputa, the degree of color depending on the amount of blood in it; the crepitations supersede the natural murmur; the sound on percussion is less clear; the pain is commonly less sharp; dyspnea increases. The disease is in its primary stage. More intense or extensive pneumonia may prove fatal, but not usually, in the primary stage. The *second* stage exists when dyspnea is great, speech difficult, the sputa very viscid, the sound dull on percussion, bronchial breathing, and, most generally, bronchophony present. We may guess that the *third* stage is established, if the face is very pale, and the sputa like prune juice, or puriform, or if the disease has lasted a certain time. Recovery from the third stage is thought impossible.

Duration.—Anatomical Characters.—Causes.—The average duration of pneumonia is ten or fourteen days. In the pleurisy which often attends pneumonia, there is seldom much effusion. The heart's right cavities after death are found distended with black blood, also the liver, spleen, and intestines. Cold may cause pneumonia; sometimes no cause is known.

Prognosis.—The first and second stages may be recovered from. Inflammation of the upper lobe is more dangerous than that of the lower. Much dyspnea is a bad omen. If a feeble pulse goes with much dyspnea, and does not develop on the first bleeding, it is a bad omen; so is delirium. The different kinds of sputa speak for themselves.

Treatment.—Blood-letting; tartarized antimony; mercury. If, with the physical signs of pneumonia, in a patient previously strong, there be high fever, hot and dry skin, a hard, firm pulse, pain of the chest, restricted breathing, especially if these exist in the first stage, you may bleed. Bleeding should be carried on till some sensible impression is made on the system; till the *pulse* gets *soft*, or, if contracted, till it becomes *fuller*, till the *sensation of constriction* is abated and *dyspnea* relieved, or until *syncope* threatens. The subsequent condition of the case will determine the necessity for subsequent bleeding. As an auxiliary to the lancet, and in less severe cases as a substitute for it, cups or leeches may be applied to the chest. Keep the patient in bed and from speaking, and follow the antiphlogistic regimen. Bleeding, in the second stage, if warranted by the symptoms, may do good by diminishing the blood in the lungs, heart, and arteries, and by favoring the absorption of the lymph. But a time comes when bleeding is injurious and weakens the patient, preventing him from expectorating. Tartar-emetic is adapted to the first stage, mercury to the second. Tartar-emetic is not given to cause vomiting. It generally causes vomiting two or three times, and then *tolerance* of it is established. Check the vomiting and purging by a few drops of laudanum to each dose. After free bleeding, give every hour, a dose of tartar-emetic gr. $\frac{1}{4}$ in half a wine-glass of water, with a few drops of laudanum or syrup of poppies;

every two hours add one-third of a grain till two grains are reached—persist in this—omit the opium if the patient do not vomit. The tartar-emetic does most good when it does not purge or vomit, or cause general depression. Stop the medicine when the dyspnea ceases, but resume it if the inflammation again threatens.

In the second stage, make the gums tender by mercury, as soon as possible. Give repeated small doses; gr. i of calomel every hour, or grs. ii every two hours; or grs. iii every three hours; combine opium to prevent its acting on the bowels. If calomel irritates the bowels, give blue pill or hydrarg. cum creta. If necessary, rub in linimentum hydrargyri or the strong mercurial ointment.

When the lung becomes solid, regulate the treatment by the state of the system at large. If the pulse be steady and firm, wait the effects of the mercury. But when sunken features, pallid face, cold surface or extremities, a tendency to delirium, above all a feeble or irregular pulse exist, give cordial and stimulant medicines; carbonate of ammonia in a decoction of seneka; wine, milk, or beef-tea. While there is fever, blisters probably aggravate the inflammation. But after it, when the expectoration is difficult, dyspnea great, and pain or tightness is felt in the chest, apply a large breast-plate of blistering plaster. Blistering distant parts is perhaps useless. Give an active aperient at the outset and produce at least one stool a day. Too much purging may injure the mercurial plan.

LATENT PNEUMONIA.—*Treatment.*—Pneumonia may supervene on bronchitis, phthisis, heart disease, and fevers, especially the exanthematous; then the general symptoms are often only slightly marked. When pneumonia goes unnoticed through all its stages, it is *latent pneumonia*. Active depletion is then seldom borne; apply cups to the chest, and sustain the strength by ammonia, wine, broths. Blisters are useful; apply them early. With these cautiously use mercury. Convalescence is often rapid, and often false. A patient is not secure as long as any crepitations remain.

LECTURE LII.

PLEURISY.—This is inflammation of the pleuræ. Pleurisy and pneumonia often exist together. If the pneumonia predominates, the disease is *pleuro-pneumonia*; if the pleurisy, *pneumo-pleuritis*. Pleurisy oftener exists alone, than pneumonia.

Anatomical Characters.—*False Membranes, Friction, Sound.*—The pleura being a serous membrane, the inflammation is of the adhesive kind, and serum, lymph, pus, or blood, is poured out. After death, the inflamed pleura is sometimes found *red*; it seldom or never thickens, nor does it easily soften or ulcerate, though it often appears thick on account of the false membrane on it; sometimes it easily peels off from the lungs. The naturally opposed pulmonary and costal pleuræ may be totally or in part glued together by lymph or separated by fluid. The lymph, when first poured out, is soft and grayish white, like paste, but soon becomes more consistent and organized. Organization may take place in a very few days or not for months; the former is most usual in the young and healthy, the latter in the old and unhealthy. The extent of the false membrane and adhesion depends on the extent of the inflammation. The adhesion in old cases becomes firm like areolar tissue. Sometimes the false membrane is thin, oftener thick, and often several layers are superposed. When the pleuræ are dry and roughened by inflammation and lymph, a rubbing

sound of three or four jerks is heard as the pleuræ glide over each other during deep inspiration—this is *friction* sound. This grating sound is sometimes felt by the opposed laud. The friction sound is transitory, being soon stopped by adhesion.

Liquid Effusion.—Its Effects.—Sometimes the serum in the pleura is clear and colorless, or pale lemon-colored and transparent; this may happen without inflammation. Frequently there is also a coating of lymph; this is a sign of inflammation. Very often the fluid is whitish like whey, sometimes puriform, sometimes tinged with blood, sometimes pure blood divided into serum and crassamentum. The different fluids are always, or almost always, without smell when air has not had access. Sometimes air or gas is found in the pleural cavity, alone or oftener with fluid. These gases may result from exhalation or decomposition, or generally from the admission of external air. The fluid at first compresses and flattens the lung against the mediastinum and vertebral column; then, as it increases, it presses down the diaphragm, displacing the spleen, stomach, or liver, or it pushes out the ribs and intercostal spaces; or it pushes aside the mediastinum and heart. The compressed lung is often bound down by false membrane, but is still sound and may be again enlarged, when taken out of the body, by blowing in air; sometimes its cellular texture is obliterated, it admits no air, is carnified. Sometimes the fluid makes one side of the chest larger than the other, especially in chronic but sometimes in acute cases. Remember that naturally the right side is mostly larger than the left. When the fluid is re-absorbed, but the lung does not re-expand, the ribs sink, and the chest on that side gets narrower, and the other somewhat larger than natural. Sometimes the atmospheric pressure causes lateral curvature of the spine. The heart is dragged to the shrunken side.

Auscultatory Sounds.—When the lung is compressed by the fluid, it contains less air, and the respiratory murmur is diminished. When the spongy lung around the larger bronchial tubes is compressed, bronchial breathing and bronchial voice and cough are heard through the fluid and solid lung, but somewhat modified. When the effusion squeezes all the air out of the lung, and distends the thorax, and compresses the bronchial tubes, no respiratory murmur nor tubular breathing can be heard; bronchophony also ceases, or is but faintly audible. Over the fluid, percussion gives a flat sound. In the hepatized lung of pneumonia, percussion gives a dull sound also, but this does not shift with the position of the patient, as does that of pleurisy; for in pleurisy as the water gravitates and occupies the lowest position when the patient moves, the upper part gives a resonant sound, but the lower a dull one. But there are two cases, in pleurisy, in which the sound does not shift; *i. e.*, when the liquid is confined by partial adhesions, and when the liquid fills the *entire* cavity and therefore is immovable. In this last case percussion is dull all over the affected side, which is seldom the case in pneumonia. The dullness on percussion comes on much more quickly in pleurisy than in pneumonia, even in twelve hours. Pleurisy, by displacing the mediastinum, causes the *whole* sternum to give a dull sound; hepatization makes *one-half* only dull. In one or two days, the whole cavity of one side may be full of fluid and give a dull sound; this early dull sound is rare in pneumonia. On the painful side, while there is little or no effusion, the vesicular breathing is feeble, but percussion gives the same sound on both sides. As the fluid increases and the respiratory murmur decreases on one side, the sound becomes *puerile* on the other. The bronchial voice and respirations, besides their other qualities, are modified by the undulations caused in the fluid by the vibrating bronchi and condensed pulmonary tissue.

The voice becomes trembling, cracked, like the bleating of a goat—*ægophony*. When the amount of liquid is large and compresses the bronchial tubes and *damps* their vibrations, *bronephony* results. Compare the voice in corresponding parts of the two sides of the chest.

General Symptoms.—The general symptoms of pleurisy are: rigors, pain in the chest, dyspnea, cough, difficulty of assuming certain positions, and fever. The *pain* or *stitch* is characteristic, and is sharp and stabbing; it is most common on a level with, or just beneath, one breast, corresponding to the attachment of the diaphragm, perhaps because there is more motion there. Sometimes, however, it is felt in the shoulder, axilla, beneath the clavicle, along the sternum, or over one side, or along the edge of the false ribs and reaching often the flank, or along the loins, and simulating lumbago. It is generally increased by percussion, intercostal pressure, lying on the affected side, deep inspiration, cough, and bodily movements. In some patients the pain is severe; in some, moderate; in some it is never felt. The more *circumscribed* it is, generally the more *acute* it is. It usually exists from the outset; it is sometimes vague at first, but fixed in a day or two, resembling rheumatic pain, or pleurodym, or nervous pain. If it is increased by slight pressure *on* as well as between the ribs; if extensive, with no fever and inconstant, it may be fibrous or muscular, but this is not *certain*. Many cases of pleurodym are really *dry* pleurisy.

Dyspnea is increased by pain, by fluid compressing the lungs, especially if large in amount and *rapidly* effused. If the effusion is *chronic*, its effect is slight. Sometimes dyspnea is urgent from first to last—these cases are apt to be fatal—or respiration is urgent at first and easy afterwards; or it is always facile. The *cough* is small, ineffectual, not paroxysmal; is sometimes absent. It is dry, or there is the expectoration of slight catarrh; or frothy mucus sputa, showing bronchitis; or rust-colored sputa, showing pneumonia. When there is pain the patient lies on the sound side; when the pain is gone, but there is much effusion, lying on the sound side causes dyspnea; the decubitus is generally *diagonal*, *i. e.*, between the side and the back. Some lie indifferently on either side. None of the above symptoms are separately pathognomonic.

LECTURE LIII.

PLEURISY—Continued.—*Recapitulation of Symptoms.*—The *pain* at the outset is preceded or accompanied by rigors, usually by a dry cough, fever, often high, and a feeble respiratory murmur, and the other consequences of the pain. If the patient recover after a few days, it has been a case of dry pleurisy, with, very likely, permanent adhesion of the lung to the ribs. In acute cases the pulse is remarkably *hard*, that of pneumonia being soft. The integument of the dilated side of the thorax is often œdematous, owing, somewhat, probably, to the patient's habitual position. When there is much effusion, the patient cannot lie on the sound side, because then that side cannot expand in breathing; but especially because the fluid presses down on the mediastinum and lung and causes dyspnea. In pleurisy with effusion, the hand placed on the chest feels a strong thrill on the sound side, but none on the other, when the patient speaks; but when the whole lung is *solid*, the thrill is *augmented*. This observation is useful only when the thrill exists in health in the patient.

Diagnosis of Pleuritic Effusion and Pulmonic Consolidation.—When dullness on percussion extends over the *whole* of one side, pleuritic effusion may

be distinguished from pulmonie consolidation by the following : The history of the case. In pleurisy, sharp pain and a dry cough, or no cough, precedes the dulness ; in pneumonia, crepitations and the rust-colored sputa precede the dulness. A solid lung does not distend the cavity ; copious effusions usually do. In pneumonia there is bronchophony and, if the side is movable, bronchial breathing ; these are absent in pleurisy. In pneumonia the patient is indifferent as to position ; not so in pleurisy.

Causes.—The most common exciting cause is cold ; other causes are, mechanical violence, extension of disease from other parts, broken ribs, penetrating wounds, perforating ulcers, or cavities extending from the lungs. If air is admitted from without or through the lungs, *pneumothorax* is apt to be effused.

Pneumothorax.—Its Sounds.—When the pleura contains air only, it is *pneumothorax* ; when air and liquid, (which is infinitely more common,) it is *pneumothorax with effusion*. The term *pneumothorax* is applied to both conditions. As the air occupies the upper and the fluid the lower part of the cavity in all positions of the patient, percussion gives a hollow, tympanitic sound in the upper, and a dull one in the lower parts. Besides, no respiratory murmur is heard, nor thrill felt, where there is the tympanitic sound. When the patient breathes, the ringing, metallic sound or “*amphoric resonance*” is heard, *i. e.*, a sound like that produced by blowing obliquely into an empty flask. The voice and cough are *more strongly* metallic, and are apt to be succeeded by a tinkling echo. The voice and cough are those of a person speaking or coughing into a well or vaulted room. These sounds denote the presence of air, and perhaps liquid, in the pleura in particular, and sometimes in the lung. Sometimes, especially when the patient changes position, the *metallic tinkling* is heard, *i. e.*, a sound like the distant tinkling of a sheep bell, or like that of a pin’s head dropped into a glass vase or metal basin. This likely results from liquid dropping or air bubbles bursting. When by *succession*, *i. e.*, giving the body a sudden jog, the ear applied to the chest hears the liquid splashing, it is a certain sign of *air* and liquid being present. This state may last long without much injury to the health. The cases of air in the pleura are the most severe. Tubercles in the lungs may cause *dry* and adhesive pleurisy and thus prevent perforation.

Terminations.—Pleurisy may end in perfect recovery ; or in adhesion with some dyspnea ; or in shrinking of the chest, with total, or almost total uselessness of the lung ; or in death by suffocation from the fluid ; or by asthenia with hectic fever from exhaustion and, perhaps, suppuration. Simple idiopathic pleurisy is seldom fatal. Pus effused in the pleura occasionally forms an abscess and breaks outward and admits air. Air may get into the pleura through ruptured air-cells. Pus generated from decomposition in the pleura smells like sulphuretted hydrogen. Much air compresses the lung, and if it be suddenly admitted speedy death by apnea may result, as is most apt to happen when a fractured rib punctures the pulmonary pleura.

Treatment.—When the stitch and restrained breathing exist in healthy persons, bleed *freely* till they are relieved, or till fainting threatens. If they return and the pulse continue firm and hard, bleed again ; or cover the painful side with leeches, or cup. The blood is deeply buffed and cupped. If there have been previous chest symptoms or any suspicion of tubercles, if the patient be delicate, very young, or very old, employ leeches only. Tartar-emetic is *not* adapted to inflammation of the pleura. But mercury is : obtain its specific effect by equal and frequently-repeated doses, with opium. In very severe cases, if required, rub in the linimentum hydrarg. or strong mercurial ointment. If pain remain after the fever diminishes, apply leeches or a blister. Blisters are not good in active cases. To get

rid of the fluid which may remain after the pain, fever and dyspnea are gone, keep the patient on low diet, and the gums tender with mercury; apply repeated blisters; give purgatives and diuretics. A good diuretic is digitalis gr. ss, squills gr. i, and blue pill grs. iii or v; repeat according to the state of the mouth. In partial contraction of the chest, adhesions may form, which obliterate the cavity, and in them tubercles and ossific matter may be deposited; or the adhesions may stretch and the chest expand again.

Paracentesis Thoracis.—In acute or chronic pleurisy, when the effusion continues and suffocation threatens, tap the thorax. The operation is not difficult nor formidable, but a wrong *diagnosis* may be fatal. Whether fluid is in the pleura or not, can be learned from what has been already said. Never tap unless life is in jeopardy from the fluid, which is the case if fatal apnea or syncope threaten,—if there are, with the physical signs of abundant effusion, great dyspnea, an anxious and livid aspect, a tendency to delirium or extreme faintness, and a vanishing pulse. Again, if the patient, though not suffering much dyspnea when lying quiet, loses ground daily, and death by asthenia appears inevitable, when all else fails, and no disease or old age accounts for the sinking, tapping should be tried. *Pus* should be let out. Before tapping, explore the chest with a grooved needle; it lets us know where, and what kind, the fluid is. If it be serous, it trickles out and possibly there are no false membranes; if puriform, it may come out by a drop or two, and the membranes are likely thick. This puncturing is quite harmless and not much painful. The trocar should be *sharp*, so as to pierce any tough lymph. If there be *pus* in the thorax, draw away as much as possible. Take away as much as will come, if the liquid be serous. If *pus* comes out, keep the aperture open, and draw the puriform fluid off twice a day by a syphon. If serum is let out, close and heal the wound. But if the patient does not improve, if hectic fever in a day or two set in or continue, if much constitutional distress arise, reopen the wound. Now puriform matter is probably found, and even stinking and poisonous gases. Commonly, after the fluid is let out, the chest on that side shrinks within its natural size. If there be any soft, inelastic tumor, showing the fluid tends outwards, puncture it immediately: this is the *operation of necessity*. In performing the *operation of election*, avoid the heart and all resonant spots, and parts affording sounds of respiration. Tap where the freest vent can be obtained for the liquid. The intercostal space between the sixth and seventh ribs, where the digitations of the serratus major meet those of the obliquus externus muscles, is the place usually recommended. Beware of piercing the liver or diaphragm or spleen. Laennec prefers the space between the fifth and sixth ribs.

It may be necessary to puncture for *mere* pneumothorax, when the air threatens death by apnea. The diagnostic signs of pneumothorax are the fractured rib which pricked the pulmonary pleura, the tympanitic sound, and the absence of respiratory murmur in the part, and the increasing dyspnea. Use the smallest size trocar or an acupuncture needle. Pneumothorax, depending on specific disease in the lung, may sometimes demand puncturing. It may save life for a time, prevent suffocation, or relieve distress, but it does not cure. The *pus* sometimes finds its way into the air-passages and is expectorated. If there be *no tubercular disease*, tapping may be successful.

LECTURE LIV.

PULMONARY HEMORRHAGE.—This is oftener secondary than primary. The bleeding may be from a ruptured blood-vessel, but is more commonly from the capillaries of the air-passages. The blood-vessel may be ruptured by disorganization in its coats, as in aneurism; or by disease in neighboring parts, as in phthisis, sometimes. When the bleeding has been from the capillaries, the mucous membrane is usually found, after death, red from capillary congestion, or pale from the hemorrhage. *Idiopathic* active hemorrhage is very rare, unless certain *vicarious* bleedings be considered such. The *disposition* to pulmonary hemorrhage is increased by whatever diminishes the capacity of the thorax and compresses the lungs, or the heart and great blood-vessels, and thus causes mechanical congestion; as is noticed in persons with crooked spines, in tailors, tight-lacing, and dropsy. Pulmonary hemorrhage, vicarious of menstruation, is common, and not usually dangerous.

Its Connection with Phthisis and Heart Disease.—Secondary hemorrhage, in a very large proportion of cases, is dependent on incurable disease. Hæmoptysis is by far *most often* symptomatic of tubercular phthisis. It is always so when the tubercles on dissection are found crude and entire, and the membrane unbroken; and it is probably so in most cases, even when cavities exist, especially if they contain no blood. Hæmoptysis may precede the symptoms of consumption for years or *immediately*, or it may accompany phthisis, or be entirely absent. Next to *tubercular* disorganization of the lungs, the most frequent source of pulmonary hemorrhages is organic disease not of the *right*, but of the *left*, side of the heart; for *obstacles* in the right side gorge the *liver* and *portal* system, in the left the *lungs*.

PULMONARY APOPLEXY.—Often directly connected with pulmonary hemorrhage and cardiac disease, though not *always* or *necessarily*, is *pulmonary apoplexy*. It is *circumscribed* and *uncircumscribed*. In the former, a number of compact masses of coagulable blood, from the size of a marble to that of a hen's egg, are situated here and there and sometimes in distant parts of the lungs, but chiefly towards the posterior surface of the lower lobes. The cut surface is more or less circular, of a uniform and very dark color throughout. *Occasionally* the pulmonary substance seems torn. One or more *lobules* are gorged with blood, which is thus circumscribed. In the latter, these masses are fewer, perhaps one only, larger, diffused, occupying sometimes nearly all of one lobe, its limits obscurely defined, and its color deepening to the centre. The principal symptom attending the formation of these masses is hæmoptysis; the principal cause is disease of the left side of the heart, often of its mitral orifice. In the first, the hemorrhage is often severe and copious; in the second, sometimes scanty, but commonly slow, oozing and persistent. The term *pulmonary apoplexy* is bad because the hemorrhage can very seldom take place from the rupture of a blood-vessel. The apoplexy is not the *cause* of the hæmoptysis; they both are effects of the same cause that produced the extravasation at first. In the circumscribed, the blood is likely effused in the larger branches of the air-tubes; in the uncircumscribed, in the bronchial tubes; in either case, the blood or a part of it is driven back into their positions by convulsive efforts to respire, or by paroxysms of coughing. In the uncircumscribed, a part of the blood is expectorated in separate dark-red sputa with some mucus. A similar condition of the lung sometimes occurs in *purpura hæmorrhagica*, without any impediment to the blood.

In those subject to it, hæmoptysis is a melancholy omen. Hæmoptysis may be caused by the expulsion of "bronchial polypi." The *streaked* blood, as of bronchitis, or the rust-colored sputa of pneumonia, or the hemorrhage from mechanical injury, are not referred to in this lecture.

Symptoms.—Causes.—The hemorrhage may occasionally be so copious as to kill outright by suffocation or syncope. The diagnosis between bleeding from the fauces or mouth and the lungs is easy if the mouth be examined. The signs preceding hæmoptysis are often an uneasy feeling in the thorax, pain, or a sense of weight, or heat or pricking, beneath the sternum, with anxiety; a saltish taste, and a tickling at the top of the larynx, which produces a coughing or hawking which brings up frothy and florid blood. Any thing that hurries the circulation will tend to excite the hemorrhage; straining, bodily efforts, much or loud talking, singing, playing wind-instruments, diminution of the weight of the atmosphere, as in ascending mountains. Auscultation and percussion are not of much use as far as the hæmoptysis is concerned; but it will inform us of the disease of the heart or lungs which caused the bleeding.

Treatment.—Stop the bleeding as soon as possible, and relieve the necessity on which it depends: for the longer it lasts the greater the injury; especially may pulmonary apoplexy render a portion of lung useless for a long while or forever. Remove active or passive congestion, if possible. Tubercles cause active or mechanical congestion; heart disease, almost always mechanical congestion. Fever often exists; sometimes the pulse is quite hard and full and bounding—*hemorrhagic pulse*. Surround the patient with cool, fresh air; keep the head and shoulders elevated; order the most meagre diet; forbid exertion, speaking, &c; open the bowels freely at first, and then *keep* them lax; it may be requisite to bleed from the arm or surface of the chest. The amount and repetition of the bleeding will depend on the continuance or not of the hemorrhage, but especially on the state of the *pulse*. The notion that *local blood-letting* causes or increases hæmoptysis is a fanciful one. When the fever or congestion is abated, or when there has been no constitutional disturbance and the hemorrhage was passive from the start, and when its continuance may be injurious, employ other remedies for hemorrhage. Plumbi aetas internally is very potent. Dr. Paris says it is safe and manageable. He uses it in small doses and guarded by opium. Some physicians fear its poisonous qualities, fear its producing *colica pictonum*. Dr. Thompson considers lead poisonous only when in the shape of its *carbonate*. He therefore prevents the *acetate* from becoming the *carbonate* in the intestinal canal, by giving it in draughts containing some dilute acetic acid. No bad consequence comes from this combination. In slight hæmoptysis, the mineral acids, with or without alum, are often sufficient; or, if there be feverishness, the saline draught with nitre and digitalis. Of *mercury*, as a remedy for pulmonary hemorrhage, mention has already been made.

Ruspini's styptic, which is sometimes used, mainly consists of a solution of gallie acid in alcohol, diluted with rose-water. Pure gallie acid may be given in doses of grs. iii to vi every six hours.

LECTURE LV.

PULMONARY EMPHYSEMA.—Of this there are two kinds, *vesicular* and *interlobular*. The former is dilatation of the air-cells of the lungs; the latter, infiltration of air into the interlobular or subpleural areolar tissue.

Anatomical Characters.—In the former, which is extremely common, the enlarged cells are often misshapen, and vary in size from that of a millet-seed to that of a swan-shot. When they are as large as a nutmeg or hen's egg, it results from the stretching or rupture of their partitions, and the union of several cells. When the thorax is opened after death, the cells can be seen through the pleura. Sometimes all the vesicles of one lobule only are enlarged and protruded. Often they make the surface of the lung quite irregular. Sometimes one large bulla, like a little bladder springing from a footstalk, is seen on the surface of the lung; connected with this there is generally as large a cavity in the lung. These bullæ are not movable from place to place. To get a good view of the dilated cells after death, keep them always filled with air, blown through the bronchial tube, and dry that portion of lung in a current of wind. All parts of the lungs are liable to emphysema, but it is much more common and marked at the loose anterior borders and near the summits. Both lungs are generally more or less affected at the same time. The emphysematous parts are drier, contain less blood, and are lighter than ordinary, and float high on water. They also are usually paler than the rest, and sometimes quite white; in extreme cases the surface is piebald, with large, bleached-looking patches. When vesicular emphysema occupies nearly the whole lung, it is apparently too large for its case, and *protrudes* when the sternum is removed. Such a lung feels like a down pillow, crepitates less than natural, and the air is less easily forced out.

Physical Signs.—When the emphysema is extensive, the lung loses much of its elasticity, the thoracic respiration is incomplete, and the thorax nearly fixed, prominent, and rounder on the diseased side or sides, and likely irregularly prominent, bulging here and there; the clavicles are ill-defined; respiration is mostly abdominal.

Auscultatory Signs.—Over the diseased parts percussion yields an unnaturally clear, resonant sound, showing that there is air beneath; auscultation detects very feeble respiratory murmur, showing the air to be stagnant. When there is no vesicular breathing, the air may be in the cavity of the pleura or in the lung. It is not likely pure pneumothorax, for this is extremely rare. If the proper signs of pneumothorax with effusion be absent, we conclude that the stagnant air occupies the lung, more especially if the part be also prominent. Most writers say, that *dry* crepitation, *i. e.*, a sound like that of inflating a dry bladder, may be heard in the emphysematous parts. If such a sound exists it is likely large crepitations in the neighboring parts, which are often affected by catarrh.

General Symptoms.—These are habitually short breath, with occasionally extreme dyspnea; cough, but not constantly; palpitation and œdema of the ankles generally, as the disease advances; a good appetite and no loss of flesh, usually; no fever—the disorder is chronic. The urgent dyspnea sometimes has no obvious cause; often it is connected with attacks of smart bronchial catarrh. It is apt to come on suddenly at night, for the horizontal position interferes with the motion of the diaphragm, as does also flatulence or fullness of the stomach. The attacks of dyspnea become more frequent and severe as the patient and disorder grow older. They are attended with much wheezing, and, in the lower posterior part of the lungs, crepitations are generally audible. The palpitation and œdema of the feet, which at first cease with the violent dyspnea, become at length permanent. The expectoration, if any, is thin like gum water and foamy. Emphysema is seldom complicated with tubercles; but this complication we may suspect, if hæmoptysis or emaciation occur.

Its Effects.—Causes.—Emphysema is a consequence of pre-existing thoracic disease. That disease is generally collapse of the lungs, or a con-

dition in which it is impermeable to air and at the same time diminished in bulk. Some consider it occasionally congenital and idiopathic. It is *progressive*, the dyspnea gets worse as it advances. Pressure on the lungs, tumors in the thorax, crooked spine, tight-lacing, tubercles, may produce or aggravate the disease. When its capillaries are effaced, the lung cannot admit its due amount of blood through the pulmonary artery, and then the increased action of the right ventricle leads to permanent dilatation of the right cavities, to palpitation, œdema. Simple vesicular emphysema is seldom very dangerous. It is a very common cause of *asthma*, but of a less dangerous form than that proceeding from certain other organic changes.

Treatment.—There is scarcely any cure. Guard against aggravating circumstances. Remove or mitigate other co-existing disorders. Order change of air, warm clothing. Keep the feet dry and warm. Advise cold shower-baths. During the extreme dyspnea, loud and protracted expiratory wheezing is heard; and if, withal, small crepitations indicative of pneumonia are heard, cup between the shoulders. The great assuager of the dyspnea in this disorder is opium, especially combined with æther. Hoffman's anodyne 3 ss, acetate or muriate of morphia gr. $\frac{1}{3}$, in camphor julep, often acts like a charm. The blueness, which is temporary, of the lips and countenance should not deter from giving a full dose of opium.

INTERLOBULAR EMPHYSEMA.—In *interlobular* and *sub-pleural* emphysema, which is *true* emphysema, the bullæ between the pleura and lung may be moved about by pressure. The bulla may be as large as a hen's egg. The air likely gets through a ruptured air-vesicle. It may rupture the pleura sometimes and enter the cavity of the thorax. Sometimes the air may blow the lobules of the lung asunder, even an inch. If it reach the root of the lung, it passes to the areolar tissue of the mediastinum, neck, and chest. Interlobular emphysema may take place in a few minutes or seconds. The cause is *violent* straining. Some say there exist *dry* crepitations and friction sound.

Treatment.—Under favorable circumstances, the disease soon cures itself; the air will be reabsorbed, and the dyspnea cease. Relieve extreme dyspnea by blood-letting. If the air be felt crackling beneath the skin, let it out by a few punctures with a lancet. This form is more common in infancy.

ŒDEMA OF THE LUNGS is that state in which their interstitial tissue and air-cells are filled with serous fluid. It is common, and generally a part of general anasarca. The lung is generally pale gray or yellowish, is heavier, less crepitant, than natural, pits on pressure, is *doughy*, and does not collapse. It is attended by dyspnea, and large crepitations at the bottom only of the lung, because thither the liquid gravitates. Percussion gives a hollow sound. Sometimes there is but little expectoration; sometimes more, with a piece or two of mucus in it, and foamy. This œdema is symptomatic of other diseases, generally of the heart or great blood-vessels. Treat the original disorder.

PULMONARY CONSUMPTION—TUBERCULAR PHTHISIS.—Phthisis means a wasting away. This term is generally confined to tubercular disease in the lungs, though this disease may be situated in other organs. Tubercles are of the consistence of cheese. They are deposited from the blood often into areolar tissue. If the tubercular matter is deposited in the vesicles of the lungs, it is round; if in the smaller bronchial branches, cylindrical. The small, more firm, semi-transparent, and bluish gray, granules, are likely the yellow opaque tubercles in a *nascent* state. The softening of tubercles does not begin in their *centres*. When the tubercles are few, they, in more than nineteen-twentieths of the cases, are found in the upper, and back parts of the upper, lobes. There also are they found the largest and

most numerous, when they are scattered through the whole lung. There they first ripen, grow soft, are expelled through the bronchi and trachea, and leave the most numerous and largest *vomicæ*. The left lung is much more obnoxious to tubercular disease than the right. The tubercles, by uniting, may be as large as a pigeon's egg. The tubercular matter is sometimes uniformly diffused through the vesicular and interstitial portions of a part. The tubercles may remain crude for a longer or shorter time. Most generally they soften and are expelled.

LECTURE LVI.

PHTHISIS—Continued.—Both lungs are commonly affected at the same time, but unequally. The disease travels from above downward.

Vomicæ.—The cavities, vomicæ, vary in size, being as big as a pea, or sometimes occupying the whole upper lobe. The large cavities, which are never met with in the lower lobes, are formed by the union of small ones, and are therefore irregular and contain bands of imperfect partition which cross them. One or several pervious bronchial tubes, which look as if they had been abruptly cut, open into the cavity. Blood-vessels never or rarely thus open into a cavity; for being compressed by the tubercular matter around and likely in them, the blood coagulates and renders them impervious; whereas the bronchial tubes, not being thus easily compressed, and not containing a coagulable fluid, break down like other tissues. Occasionally a blood-vessel *does* open into a cavity, and then fatal hemorrhage ensues. Occasionally the sputa is tinged with a little blood, which oozes from the surface of the cavity. Hæmoptysis is much more frequent before the softening and expulsion of the tubercular matter than afterwards. The vomicæ are soft and raggid, but, if no more tubercles exist thereabout, they become smoother and lined by a membrane and sometimes pour out a puriform matter. Generally, the lung around the cavity becomes solid, partly, perhaps, from crude tubercle, and partly from inflammation. A single cavity, without other tubercles about, may gradually contract and be obliterated, and form a cicatrix of a cartilaginous-looking substance, and pucker up the pleura. Sometimes the watery part of the secretion is absorbed, and the earthy salts concreted into a hard chalky mass, which is sometimes coughed up, or remains, in favorable cases, almost harmless in the body for years. These concretions in phthisis denote its chronic character.

Pleuritic Adhesions.—Tubercles near the surface of the lung very generally cause dry adhesive pleurisy, which prevents perforation of the pleura and the escape of tubercular matter and air into its cavity. The adhesions are most constant and firm at the summit and back part of the upper lobes.

Ulceration of the Larynx, Trachea and Intestines—Fatty Liver.—The lining of the larynx and trachea ulcerate, often on that side only corresponding to the diseased or more diseased lung. If prominent symptoms, hoarseness and aphonia rise from the ulceration, it is sometimes called *laryngeal phthisis*. So redness and ulceration of the bronchi are confined to those bronchi which go to cavities. The ulcers are most common on the back part also of the trachea, and, when the epiglottis is involved, it is on its under surface. The glands of the alimentary canal are often the seat of tubercles in phthisis. The ulcers in these glands are prevented, with rare exceptions, from perforating the gut by the thickening or adhesions which take place. The stomach is often found, after death by phthisis, much

enlarged and thinned. The *fatty* liver is also often found; *i. e.*, an enlarged liver, full of an oily substance which greases the hand or paper, and soft and pale fawn-colored. Sometimes the liver is found large, even very large, from the infiltration of its tissue with albuminous matter. The surface is smooth and the lower edge blunt. The cut surface, having a whitish, glittering appearance, this liver has been called *waxy* liver. The only symptom of these forms of the liver is the enlargement which is sometimes ascertained by percussion and pressure.

Auscultatory Sounds—In a portion of lung, made completely solid by tubercles, no vesicular breathing is heard; but if a large bronchus is pervious, bronchial breathing and voice are heard. This same part is dull on percussion. When air goes into and out of a *vomica*, containing any kind of liquid, numerous and large bubbles are formed, and the *gurgling* sound, *gargouillement*, is heard. The same sound is heard during a cough, and is circumscribed. The cavity that gives rise to this sound is, in ninety-nine hundredths of the cases, a *vomica*; but it *may be* a globular expansion of a bronchus or an abscess. When there is no liquid in the cavity, *cavernous respiration* is heard; if the cavity is large, it is a hollow sound, an exaggeration of bronchial respiration; if the cavities are small, it is a click, or chirp, or creak. The cavity may be so large as to yield the metallic sound. This metallic sound is distinguishable from that of pneumothorax; for in the former, percussion, in nine-tenths of the cases, on account of the solid intervening layer of lung, gives a dull sound; in the latter, a tympanitic one: the former does not shift; the latter often does; *vomicæ* are most common in the upper part of the chest; pneumothorax seldom or never exists there. If the cavity be of considerable size, near the surface, with dense walls, and empty, *pectoriloquy* is heard when the patient speaks. The words are distinctly articulated; the same sound may any time be heard over the trachea of a person speaking. Pectoriloquy may be heard over solid lung when the bronchial tubes are pervious. It is said that the voice from the solid lung is loud, diffused, articulate; that from a cavity, circumscribed, whiffing. Pectoriloquy from a cavity is always attended by cavernous respiration, though there may be a cavity which is not always large enough, nor near enough to the surface, nor of a kind to reverberate the voice. Often, when pectoriloquy is absent, and cavernous respiration doubtful, and gurgling even inaudible, (because the communication with the bronchi is not free,) a slight splashing sound occurs during a cough or with every beat of the heart, if the patient hold his breath and the fluid in the cavity be thin. Since strong bronchophony often resembles weak pectoriloquy; bronchial respiration, cavernous breathing; large crepitations, gurgling, give a guarded opinion in doubtful cases.

General Symptoms of Phthisis.—These are cough, dyspnea, expectoration, hæmoptysis, wasting, hectic fever, hoarseness or aphonia, and diarrhea.

Cough, though sometimes absent, is usually present more or less, throughout phthisis. It is generally slight, occasional and dry at first; occurring when the patient rises in the morning, and during the day if he exerts himself. There is a feeling of irritation about the throat. The cough ceases in summer and returns in winter. Gradually it gets troublesome at night, and is attended by some mucous expectoration. Chronic cough, however, often depends on a disordered stomach, or chronic catarrh, or heart disease, or hysteria.

Puriform sputa is not diagnostic of phthisis, for it is common in bronchitis. Pus may be distinguished from mucus by the globules which exist in the former only. These globules exhibit prismatic colors like a rainbow, but differently arranged, when they are placed between two small pieces of plate-glass and looked through at a distant candle with a

dark object behind it. Moreover, *liquor potassæ* changes pus into a viscid, stringy mass, but liquefies mucus. The sputa of phthisis and bronchitis is a stringy, transparent, frothy fluid, with opaque, yellow or greenish masses floating in it. The heavy sage-leaf sputa belongs to both diseases. When tubercular matter is expectorated, there are dull, yellow streaks or little curd-like fragments in the mucus. But as these specks are also formed in the follicles of the tonsils, they are not diagnostic. The most characteristic sputa is the *nummular*, which consists of globular flocculent masses, like little pieces of wool; or which, when spat into a vessel without water, separates into distinct, flat, circular forms like pieces of money. In water some go to the bottom, some float on top and at different depths. When stirred, the water becomes slightly milky. This commonly marks a confirmed and advanced stage, and may continue for weeks sometimes. This sputa occasionally exists without phthisis. Flies are partial to phthisical sputa.

Hæmoptysis without mechanical injury, or disordered uterine functions, or heart disease, points *very* strongly to pulmonary tubercles. *Hæmoptysis* is not the *cause*, but the *effect* of tubercles. It is very uncommon, even in phthisical children, prior to the age of fifteen.

Dyspnea is seldom extreme till towards the end of the disease, and not always then, because abdominal disease interferes with nutrition, and diarrhoea and perspiration diminish the amount of blood to be arterialized. Sometimes there is *no pain*. Sometimes the pains are severe and felt in the sides or beneath the clavicles, and resemble those of rheumatism. *Sudden* violent pain and extreme dyspnea and anxiety, in phthisis, denote with much certainty perforation of the pleura and its fearful consequences.

Hectic Fever often creeps on insidiously. The patient feels chilly, perhaps, towards evening, in the night his hands and feet are dry and burning, and in the morning he perspires. The perspiration is sometimes moderate, sometimes profuse, especially on the chest and head. It seldom comes on while the patient is awake. Generally it belongs to the advanced stages, but may occur in the early. It will cease and return without any apparent cause. It rapidly exhausts the strength, and, when copious and persistent, is believed to betoken a short duration of the disease.

The *pulse* in phthisis is frequent, commonly ninety, or often much more. Sometimes, probably in slow cases, it remains steady nearly to dissolution.

Diarrhoea is not usually urgent till the disease is far advanced; it is then apt to rapidly waste the strength and flesh, is *colliquative*. It may occur early or be entirely wanting. The diarrhoea and perspiration have not any reciprocal relation. It depends most commonly, if not always, on serofulous ulceration of the glands of the small intestines and colon. The nleerating process extends and sometimes perforates the bowels. The corresponding mesenteric glands are often enlarged and filled with tuberculous matter.

Emaciation is often one of the earliest symptoms, and often is excessive before any perspiration or purging occurs to cause it. If, without any apparent cause, a person grows thin, his pulse quick, his breath at all short, there is most likely tubercular disease working in the lungs and abdomen. *Edema* of the ankles, and even some puffiness of the hands and face, are among the latest symptoms, and, unless there is heart disease, denote an early termination of the disease. When *aphthæ* occur they foreshadow approaching dissolution generally.

Symptoms of Ulceration of the Epiglottis and Larynx.—Ulceration of the epiglottis is often latent. Its symptoms are a raw, or pricking, or burning sensation at the upper part of the thyreoid cartilage, with occasional dysphagia and rejection of liquids through the nose. Slight ulceration of the larynx is marked by trivial pain and some change of the voice; when

deep, by severer pain and abiding aphonia. Ulceration of the *trachea* is seldom revealed by any symptom.

Sometimes the catamenia are suspended and the hair falls off. A tendency to consumption is indicated by large pupil with a sluggish iris, and by a clubbed state of the ends of the fingers, with convex and adunque nails. Yet this last is not peculiar to phthisis.

LECTURE LVII.

PHTHISIS—Continued.—What is said in Lecture XII. of scrofulous disease is true also of phthisis. The exciting causes are essentially causes of *debility*.

Diagnosis.—It may be considered as a rule, with few exceptions, that if you find dulness on percussion, or coarse or insufficient breathing, or loud or prolonged expiration, or undue resonance of the voice, or a click or a morbid noise of some sort when the patient respires, or speaks, or coughs; if this continue always between the clavicle and mamma, or between the clavicle and upper edge of the scapula, and nowhere else, especially if on one side only, or differing in quality on both sides, you may set the case down as one of phthisis. But if in the same parts the natural sounds of respiration are heard, and percussion gives a clear sound, do not despair of the case. The worst symptom, when osculatory signs are wanting, is hæmoptysis. Incipient consumption may be confounded with chronic bronchitis. The morbid sounds of the former are audible chiefly in the upper lobes; those of the latter in the lower. Some expectoration attends the cough of bronchitis from the first; that of phthisis is often for a long while dry. In simple bronchitis, there is no hæmoptysis. The pain of bronchitis is felt beneath the sternum; that of phthisis commonly on the sides, and between the shoulders.

Varieties.—Phthisis is divided into *unmixed* and *mixed*. When the tubercles remain always, or for a very long period, crude, or when they cause only so much inflammation as suffices to soften and expel them, it is unmixed; when a greater degree of inflammation is excited, it is mixed. In the former the sounds belonging to tubercles and vomicæ are heard; in the latter, these sounds are *mixed* with the sounds of common inflammation. *i. e.*, sibilus, or large or small crepitations.

This inflammation, and the bronchial or vesicular effusion, may be alleviated or got rid of, and much danger avoided by the timely application of a few leeches or cups, or a blister, or by moderate bleeding from the arm. In the first of the two kinds of unmixed phthisis, *i. e.*, in that in which the tubercles remain crude, the patient is a valetudinarian for years; the tubercles increase in numbers year after year, till at last many vomicæ are formed, and death soon follows. In the second, *i. e.*, that in which successive crops of tubercles form and are expelled, the patient has fits of ill, and then of good, health; spits for a time puriform matter, and then ceases; has hectic fever, and then throws it off, and then suffers it again; wastes and recovers his flesh, and loses it again. During the fits of illness, gurgling respiration and cough are heard; during good health, cavernous respiration, or pectoriloquy. The lung is destroyed bit by bit by new portions softening, being expelled, and forming vomicæ. At last, the lung being much injured, hectic continues, emaciation increases, strength declines, and death follows. The first of these two is the more hopeless.

In the second it is possible no more tubercles may form, and that a vomica may cicatrize.

Another form of phthisis is that in which dyspnea, cough, hæmoptysis perhaps, night-sweats, and much hectic fever exist, but no characteristic sputa; nor are the peculiar sounds of phthisis, dulness confined to the upper lobes, or pectoriloquy, or gurgling respiration heard. But small crepitations are heard everywhere, succeeded by an absence or deficiency of the proper breathing everywhere. After death, in these cases, myriads of gray, minute, miliary, nascent tubercles, granulations of Bayle, are found thickly sown over the whole air-passages, and through the entire lungs. Their sudden appearance in such abundance excites inflammation, which masks the specific disease.

Duration, &c.—The *ordinary* duration of phthisis is about six months; it may kill in less than two months, or not for many years. The *average* duration is about two years. The greatest number die between the ages of twenty and thirty; the next between thirty and forty; the next from forty to fifty; those between fifty and sixty about equal those between fifteen and twenty. Before puberty, especially in infancy and childhood, phthisis is fearfully common.

Certain occupations tend to induce consumption by the direct application of local irritants to the lungs, as that of stone-masons, &c.; or by producing debility and cachexia. Consumption is not likely contagious, nor imparted by one person to another. But watching, want of rest, the bad air of a sick-room, especially mental anxiety, may call forth the malady in the predisposed.

Treatment.—*Prevent* phthisis when it is likely to occur, *arrest* it when it is incipient or limited—alleviate symptoms when it is incurable. Predisposition to it is hereditary, and connected with the scrofulous diathesis. It may sometimes be warded off by residence in a mild, dry, and equable climate, by avoiding its causes, by pure air, nourishing but unstimulating food, moderate exercise, early hours, cleanliness, warm clothing, avoiding excessive study and severe bodily toil, and all kinds of vicious and exhausting indulgences. When the disease *exists* in either of its slow and unimixed forms, change of climate may stop its progress. But if the lungs are in a state of rapid disorganization no benefit comes from the change.

When marked inflammatory symptoms arise order low diet, take small palliative quantities of blood by leeches or cups from the chest. Some have recommended emetics in the early stage. Counter-irritation is often very serviceable; mustard poultices to the chest when painful, or a blister, or a succession of them, or friction with a liniment containing croton oil, to encounter local symptoms. Cerebral disease, mania, but especially pregnancy and suckling, if not too long continued and exhausting, acting as counter-irritants, often suspend consumption. Pregnant women rarely die of phthisis. Riding on horseback is very good; less so is gestation in a carriage or boat. Iodine and its compounds, especially the iodide of potassium in small doses, often have a beneficial influence on the general health. Cod-liver oil is very serviceable, especially in children and others affected with scrofulous swelling of the cervical glands. The dose is 3 ii to 3 ss thrice daily. To avoid injuring the appetite, it can be given at bedtime and soon after the two principal meals. To check the night-sweats, when the bowels have no tendency to be relaxed, give of dilute sulphuric acid, ℥ xii to xx, three or four times a day. When this fails, or the bowels are irritable, sponge the body at bed-time or before sleep with tepid vinegar one part, and water two parts. If the bowels are purged, the compound kino powder has much power over the sweat, and (con-

taining opium) it tends to control the diarrhea and calm the cough. Steel sometimes, in the advanced stages, does a world of good, if borne; as Dr. Griffith's mixture, *mistura ferri comp.* If *not* borne, it increases the cough, causes headache, heat of skin, and distress. It is, perhaps, most adapted to the unmixed, uninflamatory form. The *tinctura ferri murialis*, ℞ xx, three times a day, often checks the sweating. Opium is the sheet anchor for harassing cough and diarrhea. Paregoric eases cough. So does hydrocyanic acid sometimes. The tinctures of rhatany and catechu, in obstinate diarrhea, are of great service, combined with laudanum and chalk mixture; or a few grains of the *confectio opii* in peppermint water after every loose evacuation; or, in obstinate cases, a pill of sulphate of copper, gr. $\frac{1}{4}$, with opium, gr. $\frac{1}{4}$, though this may gripe. Bismuth has been recommended for the diarrhea. An enema of as much starch as the rectum will retain, with laudanum, gutt. x to xx, often relieves. Sometimes little pain is felt at all, sometimes very much. Sometimes there are harassing nausea and vomiting. When these last long and are attended by pain and tenderness of the epigastrium, they denote, almost always, a thinned and softened state of the mucous membrane of the stomach. They may be eased by a leech or two, or a blister, or the effervescent draught or prussic acid. Cover bed-sores with soap plaster, and relieve pressure by cushions, &c., or by Dr. Arnott's water-bed.

Regimen.—Consult the constitution and habits of the patient. If there be an inflammatory condition of the lungs or bronchial membrane, order an antiphlogistic diet. But if the disease does not tend to transgress its specific limits, let the diet be full and generous, but not overstimulant. Sustain the strength without exciting inflammation. Milk is nutritious and unstimulating.

All causes of catarrh, pneumonia, and pleurisy should be avoided, for they may excite phthisis.

LECTURE LVIII.

MELANOSIS OF THE LUNGS.—This is of two kinds, the *spurious* and *true*. In the former, the texture of the lungs is spoiled by matters carried into them during breathing.

Anatomical Characters.—The lungs, after death, are found to be throughout of a black color, more or less uniform. Sometimes the lung is dry and friable as well as black; sometimes moist, œdematous, infiltrated with an inky fluid; often broken into irregular cavities of various sizes, and filled often with the same black liquid.

True Melanosis consists in a morbid product of a black or deep brown color of various degrees of intensity, moist generally, unorganized, and of different forms and consistence. It occupies various organs and tissues, oftenest the areolar and adipose; also the liver, lungs, eye, brain, serous and mucous membranes. The black stuff sometimes occupies the natural cavities, sometimes surfaces; it is sometimes mixed with malignant tumors. Most commonly it assumes the form of solid tumors from the size of a pin's head to that of an orange. If separate, the tumors are mostly spherical; if many, united, generally lobulated. The surrounding areolar tissue is sometimes condensed into a kind of cyst, more generally it is not. From serous surfaces, especially the pleura and peritoneum, it may project like knobs, or hang in tumors of the size of cherries by a sort of peduncle.

The omentum is a common *habitat* of the melanotic tumors. This disease is never confined to one part. The black matter, chemistry shows, is very like the blood in its composition. No doubt it is sometimes deposited from the blood. Its origin and cause are little known. Some suppose it comes from misplaced or excessive pigment. The moist matter stains like India ink. The disease happens most often in the decline of life, when it happens at all. Sometimes the watery part is absorbed and a hard and firm mass is left. Sometimes the tumors cause pressure, and, by thus provoking inflammation, are liable to be broken down. The injurious effects of this matter arise from pressure; it may cause pain, irritation, ulceration, and, if it interfere with important functions, destroy life. There are no distinctive symptoms, except the appearance of the black masses upon the surface of the body.

Treatment.—There is no cure.

Spurious Melanosis.—Diagnosis.—Treatment.—It is a question, whether the pulmonary cavities found in the fatal cases are the effect of spurious melanosis, or of the expulsion of tubercular matter. Spurious melanosis occurs in those only who breathe an atmosphere impregnated with carbonaceous particles; true melanosis may occur anywhere. The former affects only the lungs and bronchial glands; the latter is never confined to a single organ or tissue. The former, when shown by the black expectoration and pulmonary distress to be present, may be mitigated, checked, perhaps gradually cured, by avoiding the cause and treating as the symptoms require; the latter is incurable.

Intrusion of Foreign Bodies into the Air-Passages.—Any such body may stick in the glottis and cause death by suffocation in a few seconds; or it may cause inflammation of the lung and perhaps abscess and death; or it may cause symptoms of chronic phthisis and death; or it may be expelled after variable periods of time. Food sometimes chokes, especially drunken persons, and the attack may be mistaken for apoplexy. A large morsel of food may stick in the *pharynx* and, by reflex action, bring on spasm of the laryngeal muscles and cause death by apnea. The remedy must be immediate. If the substance be small it may get entangled in the ventricles or chordæ vocales of the larynx, causing, usually, very severe spasmodic, gasping cough, choking sensation, croupy respiration, and pain; these continue till death ensues or the object is dislodged. The object may sometimes become fixed beneath the cricoid cartilage or in the trachea, and produce but little distress, unless it quite blocks up the passage. The symptoms are a wheezing or croupy sound during one or both the acts of respiration, and some pain and tenderness of the part. Or the object may get into one of the bronchi; almost always the *right* one on account of its being the larger and more vertical. Inflammation, with its proper signs, would be apt to result in the corresponding lung. Besides, the air being totally or partially shut out, the vesicular murmur is suspended or enfeebled, but percussion is clear. Probably collapse of the lungs, with its symptoms, might result. It is believed that the smoother the body the more completely the tube is plugged, and the more urgent are the symptoms. Irregular bodies are less likely to be dislodged by efforts of expiration, and cause more chronic symptoms. But most frequently the object is not fixed anywhere, but shifts its place from time to time. The distinctive symptoms are paroxysms of suffocating cough and extreme distress when the object is driven into or near the larynx; but quiet and sometimes apparent health, when it subsides into the trachea or bronchi.

Prognosis.—There is danger, as long as the object remains in the vital passages, of speedy suffocation; or of fatal damage to the larynx or to the

lungs; or of cerebral mischief during the violent coughing. Convulsions and apoplexy have occurred.

Treatment.—Dr. M. Hall's remedy for dislodging food, &c., from the pharynx is to press on the abdomen to prevent the descent of the diaphragm, and then to give a forcible blow with the flat hand on the thorax. This induces an effort similar to that of expiration, and, the larynx being closed, œsophageal vomiting dislodges the morsel. If this fail, continue the pressure on the abdomen, introduce the finger into the throat without loss of time, and repeat the blow on the thorax. The irritation of the fauces opens the cardia, and vomiting expels the morsel of food. Early tracheotomy is the only source of security. If the object is not shot forth through the opening, but is fixed, it may generally be extricated by a skilful and delicate hand.

LECTURE LIX.

DISEASES OF THE HEART.—Disease of the heart is one of the commonest of disorders. The lining membrane alone, or the investing membrane, or the muscular tissue of the heart, may be morbidly altered. Morbid conditions of the two former are fatal in ninety-nine hundredths of the cases through the alterations they cause in the third. The left side of the heart is much more obnoxious to morbid changes than the right.

Morbid Changes in the Heart.—Their Mechanism.—When the walls of a chamber of the heart become thicker, but its cavity remains unaltered, it is *simple* hypertrophy. If the walls being thickened, the corresponding chamber becomes unnaturally large, it is *eccentric* hypertrophy. When the walls increase in thickness and the cavity diminishes in size, it is *concentric* hypertrophy. This last is always congenital and mostly of the right ventricle. Of the simple and eccentric, the eccentric is much the more common. The cause, in nineteen-twentieths of the cases, is some obstacle to the free exit of the blood from the heart, or some hindrance to the heart's free and easy play. Post-mortem examination sometimes detects a semblance of concentric hypertrophy. The cause of hypertrophy and dilatation may be situated *within* the heart, as in that most common condition, constriction of the *orifices*; or *without*, as in the case of an adhering pericardium, or malposition of the heart. Generally speaking, hypertrophy and dilatation result from disease in some part which lies *beyond* the affected chamber in the order of the circulation. Thus a narrowing or dilatation of the aorta at its commencement will tend to cause hypertrophy and dilatation of the left ventricle. That narrowing will have that effect is evident: that the dilatation will have the same effect is natural: for the dilated aorta has lost some of the elasticity with which it propels the blood, and moreover the sigmoid valves not perfectly shutting the aortic opening, permits the regurgitation of a part of the blood, which keeps the ventricle morbidly full. Disease of the mitral valve causes accumulation in the left auricle, pulmonary veins, and lungs, with dilatation often, but hypertrophy less often, of the auricle. Hypertrophy with dilatation, but more especially dilatation of the right ventricle, results when the blood passes with difficulty towards or through the lungs from disease of the pulmonary artery or lungs. The accumulation may travel to the right auricle and venæ portæ and cause general dropsy, so that heart disease propagates itself in a direction contrary to that of the circulation. If the muscular tissue of the heart be pale, flabby, soft and weak, as often it is in feeble, cachectic persons, we may have dilatation without hypertrophy.

Dimensions of the Heart.—The heart, nominally, is the size of the fist of the subject; and, between the ages of 16 and 25, it weighs about six or eight ounces; from 25 to 60, eight or nine. It weighs less in women than in men. The mean thickness of the walls of the left ventricle, *at its base*, is seven lines; that of the right, two and a half. The walls of the left auricle are to those of the right, as three to two. The capacity of the right ventricle is a little more than that of the left; and that of the right auricle, more than that of the left. The space over which the heart is ordinarily heard to beat corresponds to the inferior half of the sternum, and to the cartilages of the ribs from the fourth to the seventh, on the left side. Its apex may often be *seen* pulsating between the fifth and sixth ribs, about two inches below the nipple and one from the sternum. The larger the heart, or the thinner its walls, the larger the space over which it is heard; but the thicker its walls, the smaller the space over which it is heard to beat. When solid lung lies between the ear and heart, or the liquid of pleurisy, in children, under mental emotion, febrile excitement, exercise, the heart is heard over a larger space. In healthy *thin* persons, the hand generally feels the heart striking the ribs, (*impulse*.) It is felt more distinctly, over a larger space, and higher up, in the stooping position or during a forced expiration; less distinctly, over a smaller space, and lower down, during a deep inspiration or lying on the back. The larger the heart, the more extensively it is felt. The heart's impulse affords the surest sign of hypertrophy. It is then a steady, heaving, irrepressible swell.

Sounds of the Heart — Natural — Morbid.—The sounds of the heart are two; the *first* or *systolic*, and the *second* or *diastolic*. The first happens when the ventricles contract, and it barely precedes the beat of the radial artery; the second happens when the heart relaxes from the systole. Both are followed by an interval of silence. The first is a dull prolonged noise; the second, a shorter and smarter clacking or flapping sound. The length of the first and second sounds and the silence, is as 2: 1: 2. This is the heart's *rhythm*.

The second sound is produced mainly, if not entirely, by the sudden shutting of the semilunar valves of the aorta and pulmonary artery by the recoiling blood, and probably, in part, by the relapse of the whole organ to its former place. The auricular contractions are very feeble, and attended with no appreciable sound. The first sound is owing partly to the abrupt closure of the tricuspid and mitral valves by the reflux of the blood, partly sometimes to the heart's impulse, but *chiefly* to collision between the blood and the walls of the heart.

Either sound or both may be accompanied by a noise like that produced by blowing a pair of bellows, and therefore called the *bellows sound*. This sound may be occasioned by any alteration of the due proportion between the chambers of the heart and their orifices, or by a preternatural velocity of the blood through a healthy and well-adjusted heart. If, therefore, an orifice be narrowed, or a cavity augmented, a bellows sound results. If, at the same time, the valves be rigid, or rough, or even loose and vibrating, the blowing sound is rendered louder or hoarser, like that of a rasp or file or saw. These are often called *murmurs*.

The diastolic bellows sound, mostly, if not always, denotes some organic disease of the valves of the heart. It sometimes, though seldom, informs us that the mitral valve is converted into a bony rigid chink, that the blood passing through the auricle to the ventricle causes, though seldom, the blowing sound. The reflux of blood through the same orifice, during the systole, may often cause a *systolic* murmur. The diastolic murmurs

are caused by the regurgitation of the blood, during the diastole, through the imperfect aortic valves.

Percussion over the heart gives a decidedly dull sound; but where the lung intervenes, the sound is between dull and resonant. The larger the heart the larger the dull surface. A pericardium full of liquid gives a dull sound on percussion. The natural dullness, which occupies between one and two square inches, reckoning from the point of impulse towards the sternum, should diminish or disappear in the supine position and during a full inspiration; but increase in degree and extent upon a forced expiration and in a prone posture. Often, the hand perceives a purring thrill; *i. e.*, a tremor like that felt when coaxing the back of a cat purring. This thrill accompanies the bellows and other sounds.

General Symptoms.—The *direct* general symptoms of cardiac disease are pain; palpitation, perceptible by the patient; irregular or intermittent action perceptible or not; *indirect* are dyspnea, cough, dropsies, hemorrhages, nervous affections, nervousness. *Palpitation* is increase in the force or frequency or both, with sometimes irregularity of the heart's contractions. When excessive throbbing of the heart exists but is not felt by the patient, the case is always likely one of disease; but palpitations which annoy the patient are very often connected with functional disorder only. *Irregular* action of the heart is a derangement of its rhythm, as shown by the fluctuations in the strength or number of beats or both of the pulse. When one or more beats are left out, the next is unusually strong, the pulse *intermits*. Generally, the intermissions are attended with a disagreeable fluctuating sensation in the breast. When the heart does not propel a wave of blood far enough along the artery, the pulse intermits, though the heart does not. These changes, in the great majority of cases, are unconnected with any change of structure. Disorder of the stomach may often cause them. *Tea* often disorders the stomach. Those, suffering from organic heart disease, often suffer dyspepsia, and are eased of cardiac distress by eructation of gas. We judge that palpitations and irregularities are merely symptoms of gastric disorder, when they occur occasionally only, when the rhythm is perfect during the interval, and when other signs of change are absent. Nervous, anæmic persons, especially females, may suffer palpitation of a functional kind. Nervous palpitations are apt to come on when the patient is at rest; those from organic disease are always mitigated by repose, unless the recumbent posture be assumed, and then they are increased. In chlorosis and in those who have lost much blood by hemorrhage or venesection, there is often with the functional palpitation a systolic bellows sound heard in the subclavian and carotid arteries, depending on weak muscle and thinness of blood.

In nervous persons, especially if anæmic, a continuous roaring sound, like the prolonged whispering of the word *who*, is produced by the attenuated blood in the jugular veins. Sometimes there is a regular swell in this sound, depending likely on the pulsations of contiguous arteries. This sound is functional in ninety-nine hundredths of the cases. It may be produced by pressure. Remedy the blood by steel, aloetic pills, animal food, cold shower-bath, and exercise in pure air. Depletion, as by blood-letting or active purgatives, often convert a slow and feeble pulse into an intermittent; but stimulants remove the intermittance. Also in plethora capitis the pulse intermits, but is then full and strong, and the remedy is bleeding. In nervous palpitation, it is said, the patient lies easy in any position; but easier, in heart disease, on the right side than left. Dyspnea, cough, and hæmoptysis, are equivocal symptoms. Cardiac disease often causes congestion of various parts, especially of the liver, which enlarges, grows tender, and is functionally deranged. The cerebral circulation is also apt

to be disturbed, causing headache, giddiness, dread, cowardice, irritability, frightening dreams, &c. One of the most common indirect symptoms of cardiac disease is dropsy; yet the disease may be fatal without it.

LECTURE LX.

DISEASES OF THE HEART—Continued.—*Simple Hypertrophy of Left Ventricle.*—Sometimes, though rarely, simple hypertrophy of the left ventricle occurs when, after death, no obstacle can be found to the passage of the blood or to the free play of the organ. Probably any thing which causes long-continued and undue action of the heart, as habitual bodily exertion, or protracted mental emotion, might generate hypertrophy.

Symptoms.—In this case there are palpitation, the distinctive swell of hypertrophy, a full and strong pulse, a florid face, a liability to headache, to epistaxis, to active hemorrhage, and to local inflammation. The systolic sound is less loud and clear than natural, but there is no bellows sound. Sometimes the præcordial region bulges out. But the pulsations are regular; there is no marked dyspnea, and seldom any dropsy.

Treatment.—Enjoin perfect quiet of mind and body, undeviating abstinence and the antiphlogistic regimen; employ some antiphlogistic remedies, particularly moderate topical bleedings, often repeated; attend to the digestive functions. In these cases, if in any, we may expect to cure hypertrophy.

Simple Mechanical Hypertrophy of Left Ventricle.—*Symptoms.*—Hypertrophy of the left ventricle from a mechanical obstacle, or from hindrance to the easy play of the organ, is very common. The *symptoms* of mechanical impediment are some unnatural sound, most commonly a systolic, bellows sound over the sternum and aorta, and a small, feeble pulse at the wrist. The hypertrophy which is an endeavor towards counteracting the stagnation of the blood and its consequences, is incurable, and the obstacle is irremovable.

Treatment.—Keep the hypertrophy within bounds; alleviate troublesome palpitations and unnecessarily active working of the heart by leeches to the præcordia, by cooling diuretics, as small doses of digitalis, by belladonna plaster; enjoin mental and bodily quiet, scrupulous temperance; regulate all the functions of the body. These cases are not curable; but by proper treatment and prudent habits, life may be prolonged; by the contrary it may be shortened.

MECHANICAL HYPERTROPHY WITH DILATATION OF LEFT VENTRICLE.—*Symptoms.*—Mechanical impediment oftener causes hypertrophy with dilatation of the left ventricle. Sometimes the heart is as big as that of a bullock. The symptoms will differ somewhat according as the hypertrophy or dilatation preponderates. The *symptoms* of simply dilated ventricles are diminished *impulse*, a clearer sound than natural; an approximation of the first to the second sound, the first being also extensively heard; a tendency to fluttering palpitations and irregularities of the usually weak and small pulse; a tendency to faintness and debility, and cold extremities.

Treatment.—If the pulse flutters, cautiously give tonics or stimulants; if steady, and the signs of simple hypertrophy predominate, and are excessive and troublesome, starve the patient, take blood from his side, purge him, and give diuretics and keep him *tranquil*.

DISEASE OF THE RIGHT VENTRICLE.—*Symptoms.*—*Treatment.*—Simple hypertrophy of the right ventricle is uncommon, and results from impedi-

ment to the passage of the blood from it into the lungs. More frequently the right ventricle is simply dilated, with or without hypertrophy, or even has its walls attenuated, generally from long standing lung disease.

Symptoms.—Often the right auricle is dilated, also the jugular veins which stand out from the side of the neck, and have a sort of pulsation, produced by the regurgitation of a part of the blood, where the ventricle contracts. There are also a fluttering of the heart, an irregular pulse, great distress and dyspnea, a dusky skin, and bluish, bloated, and anxious countenance, a tendency to delirium and drowsiness, and sooner or later general anasæra. Some degree of this is also noticed, sometimes towards the end of phthisis, oftener in emphysema, or organic affection of the left chambers propagated to the right.

Treatment.—These cases are difficult to treat; for stimulants may increase the distress, depletion may cause fatal syncope, may stop the heart. Act on the kidneys; enjoin mental and bodily quiet; and cautiously use steel. We can do no more than palliate.

Morbid Changes of the Heart and its Valves.—Their Sound.—Sometimes a ventricle, generally the left, becomes so thin from dilatation or ulceration, or so soft from fatty degeneration, as to bulge out into a pouch, or crack, with almost always sudden death from stoppage of the heart by the blood effused into the pericardium. The same is liable to *aneurisms*. This has not been found in the right ventricle. Hypertrophy or dilatation, or both, may, in various degrees, affect one or several or all of the chambers. The muscular substance of the heart is often pale, soft, and flabby, and easily broken down. This may occur with general debility, sometimes with a plentiful deposit of fat, or a sort of conversion of the tissue into fat, about the organ, or, perhaps, from inflammation.

Symptoms of Fatty Degeneration.—These are simply presumptive. Some symptoms are common to it with other diseases; as a weak, irregular, slow pulse, dyspnea, attacks of syncope, coma and precordial pain occasionally. But if there be fulness of the heart, without any valvular or mechanical flaw, if the patient be about sixty, and growing fat, paler, and if there is marked *arcus senilis*, you may suspect fatty degeneration. *Treatment.*—Renovate the blood by cautiously using iron; prevent threatening syncope by diffusible stimuli. Above all, insist on temperate habits and constant quiet.

Valvular Changes.—Those parts of the endocardium that help to form the valves and orifices of the heart are more obnoxious to disease than others, especially those on the left side, for there the fibrous tissue is more abundant. When the left side is much changed, the right is also often affected, but less so. Many of the alterations result, apparently, from inflammation, which deposits lymph on or beneath the membrane. The valves become thick, stiff, curled up, or glued to each other or to the walls; and they may become less transparent and less pliant. Or, independent of inflammation, they may become thin, full of holes, or rent asunder. Exerescences, like warts, may grow from them, or they may be wholly or partly ossified. Alteration of the semilunar valves of the aorta give rise to the systolic or diastolic bellows sound or to both, a double bellows sound, a sawing sound. Sometimes a new loud sound is heard perhaps like the cooing of a dove. The mitral valve may be thickened or ossified, and not close the auricular orifice during the systole, nor allow the blood to flow freely during the diastole. Constriction of the mitral valve accumulates the blood in the left auricle, pulmonary veins, and lungs. A permanent cleft in the mitral valve may cause a double bruit; one during the systole, which is common, one during the diastole, which is uncommon and faint when it does occur. Wart-like vegetations

are more common on the left side than on the right and these on the aortic valves. Ossification, deposition of phosphate of lime, is almost confined to the left side. These wart-like vegetations are separate, like rows of beads, or spring from a common base, or hang in long strings. They are soft or firm, and easily removed, or rooted in the valves, and removable only by tearing or cutting. They are found on the free edge or surface of the valve, or even on the lining of the chambers, especially of the left auricle. These warts are connected with inflammation; perhaps sometimes lymph, but certainly sometimes they are fibrin. A systolic bellows sound is caused by a current passing out of a ventricle, and then in nineteen-twentieths of the cases it is on the left side. Now if the sound be heard at the base of the heart and along the track of the thoracic aorta, and up towards the right clavicle, and even in the carotid, and if it be less audible towards the apex, and if the pulse be steady and regular, the *semilunar valves of the aorta* are affected; but if the pulse be irregular, and if the sound be heard better towards the apex on the left, the *mitral valve* permits regurgitation—there often is also a purring thrill. When, which is rare, the sound results from injury of the pulmonary arterial valves, it is heard plainest along that vessel up towards the *left clavicle*. Murmur in the tricuspid is loudest towards the apex on the right. Disease of the right heart but little affects the arterial pulse. Diastolic bellows sound is caused by the entrance of blood into a ventricle, most probably the *left*. It may be owing to impediment to the passage of the blood from the left auricle to the left ventricle; yet this *very* seldom causes any audible noise. But if the pulse of aortic regurgitation, *i. e.*, sudden, like the blow of a hammer, without any prolonged swell of the artery; or the *jerking* pulse, or the pulse of unfilled arteries, *i. e.*, a pulse as if successive balls were suddenly shot under the finger; if this pulse exist with the diastolic bellows sound, heard in the track of the aorta, and the short clack of the second sound is absent or diminished, it is quite sure that the aortic orifice is patulous during the diastole. This pulse is *visible*. Sometimes the reflex of the blood may cause a palpable shock, the *diastolic impulse*; or the refilling of the ventricle may cause it to make a supernumerary contraction. Of regurgitant sounds on the right side, little can be said.

Angina Pectoris.—Symptoms, &c.—Those afflicted with this disease are seized whilst walking, especially up-hill or after meals, with a painful sensation in the left mammary region, which seems as if it would take away their life if it were increased or continued. When they stand still the distress vanishes. The patient is himself again after the fit. There is no dyspnea; the face is pale and haggard; sometimes there is syncope. After the lapse of time, generally some months, the distress occurs when the patient is quiet, even in bed, or sometimes when he coughs, strains, or has mental emotions; and when it does not immediately cease when he stands still. The pain often extends to the left shoulder and down the left arm to the insertion of the deltoid muscle, or to the elbow, or wrist, or sometimes to the end of the fingers, particularly the last two, along the course mainly of the ulnar nerve. Sometimes similar pain affects the right side and arm, and occasionally the four extremities at once. In its genuine shape, this disease is very fatal, and often suddenly so. It principally belongs to advanced life. The disease *very* likely consists in some structural change of the heart or aorta. It is not a neuralgic affection. It is very likely that softening, *i. e.*, fatty degeneration, will ultimately prove to be the main physical condition of angina pectoris. Sometimes as from exercise or otherwise, the blood may reach the heart faster than it can be propelled, so that it may accumulate and cause distress and a par-

oxysm of angina. The paroxysm does not result from ossification of the coronary arteries, for the disease and the ossification often exist independent of each other. The patient may expire in the first or second paroxysm. Cure is perhaps hopeless.

Treatment.—Prevent the paroxysm by avoiding the causes, *i. e.*, walking up-hill or against the wind, hurrying the circulation, mental emotion, anxiety, &c. Attend to the digestive organs, for flatulence aggravates the disease. In the paroxysm, bleeding seldom does good, but sometimes does harm. Death being by asthenia, cordials, stimulants, and antispasmodics are serviceable. Opium is the remedy for lasting and severe pain. Prussic acid is thought good, also belladonna plaster, also stimulants externally, and warm carminatives or aperients, according to circumstances, internally. Hoffman's anodyne is very useful. Consult auscultation, and use the indicated remedies.

LECTURE LXI.

PERICARDITIS.—RHEUMATIC PERICARDITIS.—*Anatomical Characters.*—This is liable to arise from exposure to cold; blows on the chest, mechanical injuries, or the contaminated blood in Bright's disease; or, apparently, without any cause. But for one such case, it occurs a dozen or more times in acute rheumatism; therefore an account of *rheumatic pericarditis* will answer for all other forms of it. In almost every case of rheumatic pericarditis, there is also most probably *endocarditis*. *Rheumatic carditis* is inflammation of the peri- and endocardium. Under acute inflammation of the pericardium, coagulable lymph, or serous fluid, or both may be poured out, causing total or partial adhesion or distension of the pericardium. Pericarditis seldom proves speedily fatal; in nineteen-twentieths of the cases it leads sooner or later to changes fatal to life. In the majority of cases the whole membrane is inflamed. If a large quantity of fluid be effused and not reabsorbed, death may result in a few days; or the effusion may be small or reabsorbed, and permanent adhesion and *apparent* recovery take place. Sometimes the fluid is found clear, oftener turbid, often tinged with blood; a coating of *rough*, rugged, villous lymph, has been found, looking like the rough side of tripe. In recent cases of total adhesion, the lymph is soft, easily torn, and contains a number of bloody points or streaks. In *all* cases, *probably*, the traces of inflammation are found also *within the heart*, chiefly on the aortic and mitral, commonly on the tricuspid, sometimes on the pulmonic valves, and occasionally in the interior of one or more chambers. The inflamed valves become thicker, less transparent and pliant, and are puckered, or glued to the opposite surface by lymph. But more frequently wart-like excrescences are found, scattered over the convex surface of the valve, or near it, or oftener in crescentic rows, like a string of beads. They jag the edges, sometimes, of the aortic, and generally of the mitral and tricuspid valves, or are disposed in a line within the border of the valve. These growths cause various degrees of hypertrophy and dilatation, or, sometimes, atrophy.

General Symptoms of Pericarditis.—*Diagnosis.*—These are: often very early in the disease, a singularity of manner and a peculiar distressed expression of countenance; often, pulsation in the chest; a sense of oppression at the epigastrium; a catch in the breath; a dry cough; inability or unwillingness to lie on the left side; pain in the situation of the heart, increased by a full inspiration, by pressure on or between the ribs, or up

against the diaphragm; stiffness and pain in and about the left shoulder, extending down the left arm and stopping at the elbow or wrist. This pain down the arm is more common in chronic heart affections. There is sometimes jactitation like that of chorea. There is also delirium, sometimes quiet, but often furious and independent of disease of the encephalon; moreover, the fever of acute rheumatism is present, or, if there be no rheumatism, of the local inflammation. These symptoms seldom all concur in the same case; often nearly all of them are wanting, or are too indistinct to attract attention. The *diagnosis* is therefore uncertain.

Auscultatory Sounds.—Auscultation detects two morbid sounds when the heart is beginning to labor under rheumatic carditis, viz.: a superficial *to-and-fro*, and a deep-seated *bellows* sound. The former is caused by the rubbing together of the roughened surfaces of the *external* pericardium and is like the noise caused by a saw, or file, or a rasp, and is temporary, terminating soon in death or adhesion; the latter is a rushing or whizzing noise and depends on alteration in the valves, and is usually long-continued, often for life. The former indicates inflammation of the *external* membrane; the latter, of the internal membrane of the heart. These two sounds may exist together, or the bellows sound may exist alone, the *to-and-fro* having come and gone unnoticed.

Prognosis.—Consequences, &c.—When the *to-and-fro* sound never ceases, the case is always soon fatal. Acute pericarditis, when attended by the *to-and-fro* sound, does not admit of perfect cure; adhesion is its best event, though this, by embarrassing the heart's movements, produces at length—sometimes rapidly, sometimes slowly—atrophy of the heart in the young, or other alterations. Adhesion of the pericardium sometimes causes hypertrophy of the right ventricle, often of the left. It is held that the inflammation sometimes dips into and weakens the muscular substance of the heart, and so leads ultimately to dilatation of its cavities. Pericarditis is a fertile source of chronic disease of the muscular substance of the heart and of its consequences—asthma, dropsy, sudden death. Patients laboring under rheumatic carditis very often suffer delirium, or violent mania, or stupor and coma, or convulsions, or all of these in succession. These are sometimes, but not often, cases of *metastasis* of the inflammation to the brain; for often no traces of inflammation are found in the brain. Very likely the cardiac affection interferes with the cerebral circulation, and thus with the cerebral functions. In many cases the pulse is extremely rapid, and the delirium characterized for the most part by a singular and perverse taciturnity, even when the patient understands and is able to answer questions. In most cases, a brief interval of amendment takes place not long before the final event.

Relations of Carditis with Rheumatic Fever—Sometimes the cardiac symptoms precede those of the joints, even by two or three days. The *younger* the patient is who suffers acute rheumatism (and it has occurred as early as the third or fourth year) the more likely will he be to have rheumatic carditis. The chance of the combination appears to diminish, after puberty, as life advances. Repeated attacks of acute rheumatism make us suspect some organic heart affection. Probably the cardiac complication keeps up the disposition to these repetitions. Sometimes the cardiac affection declares itself as the inflammation of the joints declines. Often, however, they proceed together, and are simultaneously aggravated or mitigated. The cardiac affection is incident to all the degrees, stages, and forms of acute rheumatism. The strong, purring thrill which is occasionally felt over the region of the heart is a corroborative symptom of pericarditis. If the pericardium be distended with fluid, the dull sound of percussion is unusually extensive. The larger the quantity of liquid, the

feebler, more faltering, and irregular the pulse; the patient, moreover, is unwilling or afraid to change his position, lest the heart be excited and the circulation hurried. But when there is lymph and but little serum effused, the pulse, the sound on percussion, and the movements of the patient are natural.

There are no diagnostic signs, auscultatory or general, of a merely adherent pericardium. Possibly the lymph in the stiffened valves and the wart-like masses may sometimes be absorbed again, and leave the parts natural. Suppuration in the heart is very rare. Very often there is also pleuritis with the pericarditis.

LECTURE LXII.

ACUTE PERICARDITIS AND ENDOCARDITIS.—*Continued.*

Treatment.—There is seldom much hope of a perfect cure, *i. e.*, of restoring the part to its original integrity. A large proportion of cases, whether well or ill-treated, or not treated at all, *seem* to recover, for the germ of further changes for the worse is apt to remain; as injured valves, or some impediment to the play of the heart.

In acute cases, if in any, when there is no attrition sound, we may hope to arrest the inflammation and cure completely by early bleeding. But if the *to-and-fro* sound has been audible, the consequences of the inflammation can scarcely be so abolished. The best event then is adhesion. We must, however, in many cases, take blood from the arm, or freely cup or leech the præcordial region. There is a peculiar risk in frequently bleeding to syncope in this affection; because, as there is almost always endocarditis also, (in rheumatic cases at least,) the readiness to deposit warty vegetations is probably increased by the slow or stagnant state of the blood. Bleed, therefore, if it be necessary, till some effect has been produced on the pulse, and then stop; repeat or not, according to circumstances. Cups or leeches are preferable. At the same time get the gums tender with mercury. As the system often, in this disease, obstinately resists the influence of mercury, besides the frequently-repeated doses of calomel, with opium, if needed, the mercurial inunction should be used in these perilous cases from the first. Under the influence of the mercury, the pain, palpitation and dyspnea diminish. Keep the mouth sore for some time, for, though adhesion should take place, the inflammation may not therefore cease. When the pericardium is distended by liquid, a large blister over the præcordia often rapidly diminishes or removes it. The cautious use of the lancet and leeches, and the early and unshrinking use of mercury, may stave off the secondary effects to a distant period. Enjoin strict abstinence, perfect quiet, and occasionally clear out the bowels. After adhesion of the pericardium, if (as is very likely) acute rheumatism recurs, pain, palpitation and dyspnea may result. The previous active treatment is not required; but repeated leeches or blisters over the heart, and the moderate use of mercury, will generally suffice. Sometimes the pericardium is only partially inflamed, as shown by the small white spots which are found. There are no conditions or symptoms attending their formation. Pericarditis accompany other diseases, as the febrile exanthemata, especially scarlet fever, Bright's disease, &c.

THORACIC ANEURISMS.—Frequently the lining of the aorta, instead of being smooth and uniformly yellowish white, is rendered very uneven by a

great number of yellowish opaque projections of cartilaginous consistence, lying immediately beneath the membrane. In a more advanced stage, some of these projections consist of sharp-edged, irregular scales of bones, some of which are bare. These changes diminish or destroy the elasticity of the vessel, and lead to dilatation or aneurism. Most commonly the aneurismal tumor goes on enlarging; often it becomes lined, and sometimes nearly filled, by layers of coagulated blood. At length the tumor bursts, and the patient perishes.

Situations of Aneurisms.—Thoracic aneurisms are chiefly met with in the ascending part and arch of the aorta, because there disease is more common, and the momentum of the blood the greatest. Dilatation of the commencing aorta leads to dilatation and hypertrophy of the left ventricle. There is no sign to denote the presence of the aneurisms, which often exist at the very entrance of the aorta, or in the coronary arteries.

Symptoms.—Effects.—Aneurism at the arch of the aorta may press upon the trachea and impede the breathing; or, affecting the recurrent nerves, it may cause apparent laryngitis. A wheezing dyspnea, arising gradually, and with no apparent affection of the air-passages, and a sense of pulsation within the thorax, may lead us to suspect an aneurism. Often the trachea, or some of the larger bronchi, are at first flattened by pressure from the aneurism, and then give way, and the aneurism breaks into the air-passages, and death follows in a few seconds from the torrent of blood. Or, the tumor may adhere to and destroy a portion of lung, and so cause fatal hæmoptysis. Such cases are not always *fatal at once*. Or, the aneurism may, by pressure on the œsophagus, cause the symptoms of stricture of it. Hence cardiac disease and pulsation within the chest, with at length the signs of a constricted œsophagus, are strongly indicative of aneurism. The œsophagus may at last ulcerate through, and then fatal hæmorrhage ensues. Or, the aneurism presses on or obliterates the vena cava superior, and causes partial anasarca. Or, the aneurism may press on and wear away the bones of the vertebræ, and cause pain in the back, and finally palsy of the parts below that portion of the spinal cord; so that pain in the back, with pulsation, may justly cause suspicion of an aneurism. Or, the aneurism may press on the *thoracic duct*, causing engorgement of the absorbent vessels and glands and inanition. Aneurism in any part, by pressure, spoils the function and structure of the part. Aneurism of the arch of the aorta may cause the pulse of one radial artery, more commonly the left, to be very feeble, or even disappear. This difference of pulse may, however, arise from other causes. The symptoms which arise from pressure are equivocal; for various tumors may cause pressure, and they, especially cancerous tumors, are common in the thorax. But if there are also signs of disordered circulation, or heart disease, there is reason to suspect an aneurism. Still we can seldom be quite sure of this, until the aneurism comes near the surface and causes an external tumor, which pulsates visibly, or is *felt* pulsating. When, however, an enlarged gland, or malignant growth lie over a sound artery, then also there may be an impulse or unnatural sound.

The aneurism, if in the ascending aorta, appears usually on the right of the sternum; if in the forepart of the arch, it bulges at the sternal extremities of the upper ribs on the right side; if in the summit of the arch, it rises above the sternum and sternal ends of the clavicles; if in the descending thoracic aorta, it sometimes destroys the ribs and the bodies of the vertebræ, and pushes forward the lower part of the left scapula; or it shows itself in front beneath the left clavicle.

Sounds.—The steady heaving pulsations of such a tumor are synchronous with the heart's systole, and often attended with a rough bellows sound.

Of the purring thrill the same may be said. With the pulsation, the second sound is sometimes heard propagated from the heart. A double sound is sometimes heard very distant from the heart. The first sound of aneurism to the right of the sternum coincides with the pulse, and is always louder than the natural systolic sound, and generally louder than any morbid systolic sound, and diminishes in loudness as you listen nearer to the heart. But the second sound augments as you get nearer the heart. The aneurismal sounds are usually audible in the back also; if a very loud bellows sound is heard where the natural sounds are always much abated, there is additional ground for suspecting an aneurism, or some great change in the aorta.

Treatment.—Keep the action of the heart moderate, and the motion of the blood as slow as possible, without impoverishing it. Promote the coagulation of blood in the aneurism, if possible. Order a nutritious but unstimulating diet, chiefly of solid food; perfect repose of mind and body; regulate the natural functions; abstract so much blood only as may be necessary to alleviate pain, or subdue *excessive* arterial action, or unload oppressed vessels. Strong bodily or mental action may rupture an aneurism and cause sudden death. Valsalva's and Albertini's mode of treating aneurism, *i. e.*, bleeding repeatedly and keeping the patient on starving diet, with the object of favoring the coagulation of the blood in the aneurism, is likely injurious, for it prevents coagulation by making the blood watery, and moreover, reaction or a violent palpitation of the heart with injurious effects is apt to follow repeated loss of blood. Few cures indeed can be hoped for in any way. Yet life may be prolonged by great care. Digitalis and the acetate of lead may be good.

LECTURE LXIII.

PHLEBITIS.—This malady gives to many fatal injuries, and to most fatal surgical operations, and to the deadliest forms of puerperal fever, their mortal character. It is often insidious, rapid, and too often resistless in its course. The first effect of inflammation of a vein is by coagulation of the blood, to partially or entirely dam up its channel. The obliteration of a small vein is seldom serious, but the sudden obstruction of a large one causes much distress and sometimes death. *Phlegmasia dolens* is caused by a stoppage of the blood in the *femoral* vein. Such a stoppage in the *sinuses* of the brain is fatal. The *adhesive* form of phlebitis is a local disease, and its ill effects depend on the closure of the canal. If the organ affected be not a vital one, and if a collateral venous circulation be established, all may end well. Sometimes, as the inflammation subsides, the blood drills a passage for itself again. If the *suppurative* stage comes on, an abscess may form and the disease be local, or the pus may get into, and circulate with, the blood, and taint the whole system, and cause a formidable malady.

Consecutive Abscesses.—Abscesses often form in various parts, most commonly in the lungs and liver; often in or near the joints, in the serous cavities; among the muscles, in the brain, eye, &c. It is believed that these abscesses of a part proceed from suppurative inflammation, provoked by the presence of particles of pus, brought thither with the circulating blood. Foreign substances in the blood, if not taken out through the natural emunctories, are liable to be stopped by the first network of capillaries that lies in their course. Therefore, as all the blood passes through the lungs,

and much of it through the liver, in them are abscesses most commonly found. Generally, however, some particles of pus get to the left side of the heart, and into the arterial blood, tainting various parts. When it gets into the vena portæ, the liver is principally affected; when into the vena cava, the lungs, especially their lower lobes, are particularly injured. Probably cancer and tubercles are propagated in the above manner. So also may the poison of good living, foul air, &c., if they do not inflame, at least spoil the texture or healthy functions of organs. Suppurative phlebitis may follow severe or slight injuries or natural causes, as cold. When abscesses succeed amputation of a limb, or fracture of the skull, or operations on varicose veins, or phlebotomy, they are likely to be most numerous in the lungs, but more conspicuous in the liver. But they are found chiefly in the liver, when the phlebitis occurs in any tributary veins of the vena portæ, as in operations on intestines, for fistula in ano, for piles, &c. As phlebitis sometimes appears to be epidemic, and then to depend on some predisposition of the body, engendered by, probably, atmospheric influences, surgical operations should not be performed at such periods.

When great abscesses disappear, and small scattered ones do not ensue in various parts, it is because pus as such does not get into the blood, but only altered pus. During an amputation, pus from a divided abscess may get into the circulation through a vein. But as the veins become impervious from adhesive inflammation or coagulation before the stump suppurates, the pus gets into the circulation from phlebitis. Scattered abscesses appear to originate always in phlebitis, though often the seat of the suppuration may be hidden; the *bones* and their veins may often be the seat of the mischief; all local traces of the primary inflammation may vanish before death.

Symptoms.—When a superficial vein of some size is inflamed, there are pain and tenderness in its course; and, in the adhesive variety, it soon becomes a tangible, hard and sensitive cord. Whether the vein be superficial or deep-seated, there is usually œdema of the part. Inflammation of the lymphatic absorbent vessels is distinguished from this kind of phlebitis by the slenderness of the painful cord; by its more superficial position; by its being developed at insulated spots; by the number of little knots, and by the streaks and patches of bright inflammatory redness which exist in its course.

The formation of pus in separate and often distant parts is rapid, and often unannounced by any local pain. When, however, the joints or the parts near them are the seat of suppuration, there is much soreness, and the malady is liable to be mistaken for rheumatism. When the serous cavities are implicated, the pain is sometimes severe. Suppurative phlebitis is commonly attended with repeated shiverings, sometimes periodical, and profuse sweat, and occasionally with copious and very unnatural discharges from the bowels. The skin becomes yellowish, scattered patches of erysipelatous inflammation are apt to appear, and sometimes superficial gangrene. The pulse is almost always rapid. Typhoid-like symptoms occur in most cases. Very constantly there are great agitation and nervous disturbance. This disease is almost always fatal. Whether abscesses in this disease, in the lungs or liver are repairable, is a question.

Treatment.—Local depletion, when the inflamed vein is accessible; regulation of the bowels; strong animal broths and wine to support the strength; opiates to tranquillize nervousness and restlessness. Subdue and resolve the inflammation; or, at any rate, prevent its passing beyond the adhesive stage, by applying, the vein being obvious and superficial, leeches, cold lotions, or fomentations. During the progress of the malady, especially when suppurative phlebitis is prevalent, cutting into a large

vein might cause a fresh local phlebitis. Indeed, after the suppurative form has once been set up, general bleeding impairs the powers of the system to struggle against the disease.

Prognosis, &c.—The obliteration of a large vein by phlebitis or in any other way, is perilous in proportion to its magnitude and to the rapidity with which its complete occlusion has been effected. The gradual stoppage of even the largest, the *venæ cavæ*, admits of some degree of compensation by the establishment of a collateral circulation. When the superior or inferior cava is closed, the collateral circulation makes the veins of the abdomen and thorax large. If the superior is closed, the veins of the thorax are apt to be tortuous and those of the abdomen straight; if the inferior is closed, this is reversed; the retrograding blood contorts the veins. The direction in which the blood of the veins moves may inform us which, the superior or inferior cava, is obstructed.

LECTURE LXIV.

ASTHMA.—This disease is often purely spasmodic, but is oftener connected with organic diseases of the heart or great blood-vessels, but especially with emphysema of the lungs. Asthma is dyspnea, but dyspnea is not always asthma. Asthma is a great difficulty of breathing, occurring in paroxysms, accompanied by a loud wheezing respiration, going off after some hours with more or less mucus expectoration, but without fever. These paroxysms are believed to depend on spasms of the bronchial tubes.

Symptoms.—There are usually some warnings of the threatening attack; loss of appetite, often much flatulence and eructation, languor, irritability, drowsiness, oppression, chilliness, uncomfortable feeling on going to bed. The fit generally comes on after midnight, about two or three o'clock, often during sleep; the patient wakes with a sense of constriction about the chest, he sits up laboring for breath, or remains at the open window for hours, even in very cold weather. His extremities are usually cold, his countenance distressed, and sometimes a little flushed and turgid, but oftener pale and shrunk, while his trunk may be wet with perspiration. The pulse is often small, feeble, and even irregular, but sometimes undisturbed, and often there is much palpitation of the heart. If urine be passed, as it often is, at the beginning of a fit, it is copious, watery, pale, and without smell, like hysterical urine; the bowels are sometimes relaxed. The patient coughs and speaks with difficulty. These symptoms often continue for many hours, and particularly till far into the morning. Then, commonly, a remission gradually takes place; if, as is usual, mucus is brought up, the remission is more immediate and considerable. These paroxysms often continue to recur for many successive nights, and remit at length in severity and cease for a period. During the interval, in the day-time, the patient *may be*, but seldom *is*, perfectly well. Some dyspnea mostly remains, and uneasiness when the head is low, and slight exertion hurries the respiration. The intervals are of uncertain duration. If the fit cease with little or no expectoration, it is *dry* asthma; if with much, *humid* or *humoral*.

Upon the following grounds has this disease been considered spasmodic: the sensation of constriction in the chest, and often the actual cramps of other parts; the rapidity with which the dyspnea comes and goes; the extreme flatulence; the hysterical urine; the impunity with which the patient

exposes himself to cold during the fit; the *juvantia* and *lædientia*, and the absence often, after death, of any vestige of disease of the heart or lungs.

The spasms may be centric or eccentric; in the latter, the par vagum is doubtless the afferent nerve. It is said that, during the paroxysm, no respiratory murmur, or very little, can be heard. Lacnec says, that if the patient, after holding his breath nearly as long as he can, attempts a gentle inspiration, the spasm may often be overcome, and for a few seconds a clear and even puerile sound may be heard.

Causes, &c.—A disposition to asthma is hereditary; and moreover, one attack seldom fails to be followed by others. The organic changes within the thorax are predisposing causes of asthma; some of them are perhaps in turn aggravated or even produced by the fits of asthma. Uncomplicated spasmodic asthma is likely *rare*. It is extremely probable that the first step towards producing the spasms consists in some altered state of the *circulation* through the lungs, such as congestion. Slight inflammation, with symptoms of bronchitis which may remain during the intervals, sometimes results from this congestion. Flatulence, a full stomach, or the recumbent posture, or unusual action of the heart, may bring on a fit. Asthma is much more common in men than in women; it is incident to all ages, especially to adolescence and middle age; it is not common before puberty, nor does it often *begin* in old age. The chronic dyspnea of old age, with its exacerbations, and which always depends on organic disease, is not asthma. Asthmatics are not necessarily free from phthisis.

The exciting causes of asthma are: 1. Particular states of the atmosphere, which irritate the air-passages or par vagum. 2. Ipecac. 3. Certain nervous influences.

Treatment.—If asthma supervene on manifest bronchitis, or if there be any signs of congestion about the head, bleeding may be requisite; but remember that debility increases the susceptibility to the causes of the disease. Dyspnea may often be moderated or assuaged by opium, or by smoking stramonium cigars, or the cut stalks and leaves of stramonium; the smoke gets into the lungs, and the saliva, when swallowed, carries it into the system. That stramonium is efficacious in some cases and useless or injurious in others, is probably owing to the presence or absence of organic disease of the lungs or heart. The vapor of chloroform, inspired in moderate quantity, has been found very efficacious, but it is too potent to be intrusted to the patient himself. Respiring air impregnated with the fumes of burning nitre is often very serviceable. Pieces of blotting paper the size of one's hand, having been dipped in a saturated solution of the nitrate of potash, and then dried, are, one on each occasion, to be ignited on an earthenware plate. The fumes spread through the room, and often in a quarter of an hour give relief. A mixture of opium and the compound spirit of sulphuric ether (Hoffman's anodyne) is of great service; but it, or the stramonium, especially the latter, require to be used before the fit is fully formed. The chloric ether is more agreeable but less potent than the sulphuric. It is said that stramonium succeeds if it causes *expectoration*; this is doubtful. Lobelia inflata sometimes has a magical effect over dyspnea; often it does no good; it is thought dangerous. Strong coffee is a common remedy. Ipecac, often the *cause*, has been recommended as a *cure*. Galvanism was once in great vogue. In the simple form of the disease, preserve the general health. Temperance in all things, regulation of the digestive organs, living in a suitable location, the shower bath, are remedies. A threatening attack has been prevented by taking, before going to bed, a pill containing grs. $\frac{1}{4}$ to $\frac{1}{2}$ of the extract of stramonium. If obvious pulmonary or cardiac disease exist, treat them also.

DISEASES OF THE ŒSOPHAGUS.—Spontaneous inflammation of the Œsophagus is not common.

Symptoms.—Its symptoms are a sense of heat and pricking exactly in its course, and felt between the shoulders, and some dysphagia and some fever.

Treatment.—Abstinence, purgatives, and leeches along the track of the Œsophagus are the remedies.

Stricture of the Œsophagus.—This is *actual* or *spasmodic*. The Œsophagus often suffers severe injury from the deglutition of certain poisons, especially the corrosive ones; the strong mineral acids, or the caustic alkalies. Sometimes when the quantity of poison is small and its transit rapid, the cuticle alone of the gullet is destroyed, shrivelled, broken into fragments. Sometimes the subjacent tissue ulcerates and at length heals, leaving a permanent stricture which generally goes on slowly increasing until no food can pass, and the patient dies of starvation. Sometimes the whole membranous tube sloughs away, and yet the patient survives for some time.

Treatment.—Physic can do almost nothing. Surgeons pass bougies into the gullet to dilate the strictured part and prevent further narrowing. This is usually of temporary benefit only; the patient dies at last of inanition. Nutritive enemata may prolong life a little. The ulcers sometimes open into neighboring parts.

Spasmodic Stricture.—*Symptoms, &c.*—A sensation of a knot is felt in some part of the tube, or a feeling of something solid ascending from the stomach; a morsel of food stops in the gullet and causes pain, which is felt between the shoulders or in the gullet; great anxiety and distress accompany the stoppage, and the food is often rejected. The symptoms are those of *organic* stricture; the spasmodic come and go capriciously, but the others are abiding. Spasmodic stricture may be independent of any disease anywhere; but it may be symptomatic of serious organic changes. It occurs chiefly in nervous persons; in hysterical women of deranged uterine functions. The remedies are those of hysteria. Whatever weakens the system tends to aggravate the stricture. Very nearly the same symptoms that occur in stricture of the Œsophagus attend its dilatation into a large, inelastic bag. For this, medicine has no cure. Opiates may give comfort.

LECTURE LXV.

DISEASES OF THE ABDOMEN.—For practical purposes, the surface of the abdomen is divided into nine regions, by three horizontal and two vertical lines. The first horizontal line touches the end of the ensiform cartilage; the second, the lower edge of the last false ribs; the third, the crest of the ilia. The vertical lines are drawn, one on each side, perpendicular from the anterior superior process of the ilium. The uppermost middle region is the *epigastric*; its lateral ones, the *hypochondria*: the next lower middle region is the *umbilical*; its lateral ones, the *iliac* or *flanks*: the lowest middle region is the *hypogastric*; its lateral ones, the *inguinal*.

Methods of Investigating Abdominal Diseases by the Eye, Hand and Ear.—The *physical* signs of disease in the abdomen are detected by the eye, hand and ear. In the case of females especially, do not offend the patient's delicacy. Sometimes all necessary information of the *movements, size and shape* of the abdomen is obtained without removing the under garments.

By the *touch* we learn the existence and the size of *tumors*, whether they are movable or fixed, painful or indolent, hard or soft, smooth or uneven, pulsating or not; whether the surface be hot or cold; whether or not there be *fluctuation*, and consequently liquid in the peritoneal cavity, or in a cyst. During the examination, the patient should lie on his back with his head a little raised and his knees up to relax the abdominal muscles; he should do nothing to make them tense. If, notwithstanding, they remain tense, there is reason to suspect that the parts are not in a healthy state. Do not mistake this state for tumor or for an enlarged stomach or liver. The *ear*, by auscultation, tells whether a pulsating tumor be an aneurism or not, or whether there is a fœtus in utero or not; by percussion, it tells where the intestines lie, whether the part beneath be filled with air or is solid or distended with liquid; moreover, when it detects the liquid shifting with the position of the patient, it tells us that the liquid is in the peritoneum.

PERITONITIS.—The peritoneum is very *ready* to inflame. Acute inflammation of one spot is almost sure to affect also any other spot in contact with it, and is very apt to spread rapidly over the whole membrane. The inflammation tends to pour out serum and disend the peritoneum, and to effuse lymph and glue the opposite surfaces together totally or partially. The morbid conditions remaining *after* peritonitis are sometimes *inceptive of further disease*, sometimes *final*, or protective against worse evil.

Symptoms.—The *symptoms* are pain in the abdomen of, generally, a sharp, cutting, or pricking kind, and increased by pressure, by a long breath, by coughing, sneezing, straining, the erect or sitting posture, usually by lying on the side, sometimes even, in excessive cases, by the weight of the bedclothes; and *fever*.

Diagnosis.—This is not inflammation of the liver, for there is no pain of the right hypochondrium in particular, increased by lying on either side, no pain of the shoulder, no jaundice, no vomiting, perhaps; neither is it inflammation of the bowels or stomach, for there is no disturbed function of the alimentary canal to denote such inflammation. Though the pain is, *at first*, sometimes confined to particular spots, yet it generally soon extends over the whole abdomen—this is some help to the diagnosis. The pain of inflammation of particular spots is often much increased by pressure on *other* parts of the abdomen. The patient lies on his back, still, with his legs drawn up, and his breathing is *thoracic*, quick, and shallow. The pain is apt to be much aggravated at intervals; sometimes, when the inflammation is general, by flats. Pressure should be made gently with the open flat hand. Acute peritonitis generally sets in with sharp rigors, high fever, a hard and strong pulse which very soon becomes frequent and often feeble and is sometimes small from the first. After a certain time there are tension and swelling of the belly, which in the earlier stages is tympanitic. As the disease advances, effusion may occur. In fatal cases, the abdomen often becomes greatly distended; the pulse, very frequent and feeble; the countenance, (at all times anxious,) pinched and ghastly; cold sweats ensue; and finally death by asthenia. The mind is often clear to the last. Sickness and vomiting often occur, owing perhaps to the peritoneal covering of the stomach being especially implicated. Strangury often occurs, probably from the membrane over the bladder being involved. Suppression of urine perhaps is owing to implication of the membrane near the kidneys.

Causes.—Cold, especially if combined with moisture and applied to the surface of the body; mechanical injury; extravasation of the contents of the alimentary canal or of urine or of bile into the peritoneum. It is often epidemic among parturient women, and then likely contagious.

PUERPERAL PERITONITIS.—The inflammation begins, no doubt, in the

uterine part of the membrane, and spreads over the larger part of its surface. It may be epidemic or sporadic; coming on in a few days or hours after parturition. The pain generally begins in the situation of the uterus, which may be felt, and is tender on pressure, but soon a universal swelling hides the womb. Cold apparently causes this, sometimes. When epidemic, puerperal peritonitis is marked by greater depression of the vital powers and a more irregular course, the nervous system suffers, the sensorium is apt to become affected, and the disease assumes the character of typhus fever; for it results from poison in the blood, which has been supplied by the putrid coagula, or by portions of placenta, or by the products of inflammation, or by contagion, or by inoculation by the hand of the accoucheur. Great precaution should be taken by the physician that his clothes or body do not carry the contagion from one woman to another. The clothes should be changed, diligent ablution used, and the hands be washed with a disinfecting fluid, as a weak solution of chlorine. A thin, pliant, impervious glove might be used by the accoucheur, one for each ease of labor. If every thing fails to prevent his carrying the disease, the physician should abandon his vocation for a season. The infecting virus is liable to be imparted by the physician who has previously attended cases of erysipelas, sloughing sores, external gangrene, typhus fever, or post-mortem examinations.

PERITONITIS FROM PERFORATION OF THE INTESTINES OR STOMACH.—
Symptoms, &c.—This inflammation is violent, universal generally, and almost always and early fatal. The pain is sudden and intense, irremovable, and cannot generally be mitigated by medicine; the abdomen is soon universally tender and also is tympanitic and distended. Occasionally the pain intermits. Sometimes the symptoms follow a different order. The bowels are perforated by ulcers in typhoid fever, and occasionally in phthisis. Ulcers also perforate the stomach. Often there is found in the stomach one small round smooth hole, with no marks of disease about it; occasionally the hole is irregular and in the centre of a thickened and indurated patch of mucous membrane. Ulcers of the stomach are mostly chronic, however, and cause protective adhesion. Sometimes the thinned membrane may be broken by pressure, straining, &c. Peritonitis may result from rupture, by ulceration, force, &c., of the *urinary bladder*, or *gall bladder*, or *uterus*, or an *abscess of the liver*. It may succeed the operation of tapping the belly, and is then also almost always mortal.

Diagnosis.—We judge whether the case is one of *hysterical* peritonitis, by the age and sex of the patient, by the presence of the hysterical diathesis, by the *excessive* tenderness of the abdomen, or rather of its surface and of other parts also, by the incongruity and shifting of the symptoms, and by, perhaps, the natural state of the pulse and tongue.

LECTURE LXVI.

ACUTE PERITONITIS—Continued.—Simple acute peritonitis is always dangerous, yet often manageable. When complicated with earlier mischief, particularly foreign matter in the cavity of the belly, it is all but hopeless.

Treatment.—Bleed *early*, till some sensible impression is made on the circulation, or till syncope threatens; then *cover* the belly with leeches, from twenty to forty at once; when these fall off, lay a light poultice over the abdomen, or assiduously foment it with flannels wrung out of hot

water to encourage the bleeding from the bites. *Cold* applications, as cold evaporating lotions and cold enemata, have been highly recommended; but *warm* epithems are less precarious, and perhaps they only should be used. If the pulse be wiry and hard, we must not be deterred by its *smallness* from bleeding; for this smallness is characteristic of acute inflammation within the abdomen. Commonly, the pulse becomes fuller and softer by venesection—this shows the propriety of the measure. Cupping is improper on account of the tenderness of the abdomen. Sometimes leeching makes any further loss of blood unnecessary, though in severe cases the local bleeding, at least, will likely require to be repeated. Obtain the specific influence of mercury as speedy as possible, by calomel and opium, or by inunction.

TREATMENT OF PUERPERAL PERITONITIS.—This is much more uncertain and difficult, for the disease results from a vitiated state of the blood. The abdominal pain is accompanied by two very different states of the constitution; one, in which little or no depletion is borne; another, in which relief is obtained only by very large evacuations of blood. Between these two there is every grade. Adapt the remedy to the constitutional powers. If large bleeding be had recourse to, it must, to be beneficial, be within the first twenty-four hours. In the second stage it often produces, rapidly, a fatal result. In ambiguous cases give Dover's powder, grs. x, and cover the whole abdomen with a linseed-meal poultice thick enough to retain warmth for four hours. If then the symptoms are relieved, repeat the powder and poultice. If within four hours more the malady is not yielding, deplete at once. Dr. Ferguson says, "Epidemic puerperal fever has, invariably, the character common to the ordinary fevers raging with it; if the latter require depletion, the presumption is that the former will also." There is such a thing as an epidemic state of the constitution, which causes a given remedy, as bleeding, to produce different effects at different periods and in different places. In pure peritonitis *purgatives* are apt to do harm by increasing the action of the bowels and thus disturbing the peritoneum. In peritonitis from perforation, mercury is improper, for it may increase the action of the bowels and thus tear adhesion, or keep the perforation open and admit foreign matter. In simple, and puerperal peritonitis, and in that from perforation, the intestines should be kept at rest. In peritonitis from perforation, keep them quiet by large and frequent doses of opium by the mouth or rectum, and by the rigid observance of the horizontal posture till all pain subsides. Should the opiate treatment be considered expedient as an auxiliary in *mere peritonitis*, it is probably best used in conjunction with the bleeding and mercury; it should not supersede them.

CHRONIC PERITONITIS—GRANULAR PERITONEUM.—This is sometimes the sequel of the acute. Plastic lymph is effused and becomes organized; fluid is poured out and not reabsorbed; a low degree of inflammation perhaps remains or is easily re-excited; the mischief augments, and death slowly follows. Another common and equally formidable cause of chronic peritonitis is little granules lying within or beneath the membrane, or in the folds which compose the omentum. These granules occur principally, if not exclusively, in scrofulous persons. In a vast majority of cases of granular disease of the peritoneum, tubercles exist in the lungs. So that symptoms of chronic peritonitis, independent of the acute, combined with the indications of phthisis or of scrofula, point pretty certainly to milary granulation of the peritoneum. Whether these granules are tubercles, or *sui generis*, or lymph, is uncertain.

Symptoms of Chronic Peritonitis.—These are more obscure than those of the acute form. When it is not the sequel of the active form, it often

steals on insidiously. There are abdominal pains, sometimes slight but abiding, sometimes occasional only, augmented or felt only on pressure; usually a sensation of fulness and tension in the belly, though its bulk may not be altered; sometimes a sense of pricking; deep-seated tension, with looseness of the muscles of the belly; sometimes the functions of the intestinal canal are disturbed; there are loss of appetite, nausea and vomiting, irregularity of the bowels, and unnatural evacuations; or sometimes the digestive organs act tolerably healthily, according as the peritoneal covering of the stomach and bowels and biliary parts is inflamed or not. Sooner or later, in most cases, the abdomen enlarges and fluctuates. There is fever more or less marked, with progressive emaciation and debility. The face is pale and sallow and languid-looking. Very much the same symptoms are apt to result from scrofulous disease and enlargement of the mesenteric glands, and consecutive slow peritonitis.

Anatomical Characters.—After death, those glands are often found swelled, red, and hard, sometimes forming very large tumors; or gray or white granules, sometimes false membrane, often agglutinated intestines and peritoneum, are found here and there or everywhere. The omentum is generally thick, red, and fleshy; and there is fluid, commonly turbid and flaky.

Treatment.—We can seldom do more than mitigate distress, or perhaps retard the disorder. Leeches to the abdomen, in moderate numbers and often repeated, and followed by soft warm poultices; blisters, when the pain is not severe and the tenderness less; regulating the bowels by mild laxatives; nourishing, but unsimulating diet; these are the remedies. Friction upon the belly, with ointment containing iodine, may do good.

ASCITES may result from chronic peritonitis. *Active ascites* is that in which a healthy person becomes rapidly ascitic after exposure to cold and wet, and rapidly recovers again under the remedies of inflammation. There may be inflammation, but the ordinary symptoms of peritonitis are absent. More likely, an undue quantity of watery fluid gets into the blood, and is then effused into shut cavities, under the influence of cold. *Passive ascites*, which is by far the most common kind, as part of general dropsy, depends, with the general dropsy, in almost all cases, on renal disorder, or organic lung or heart disease or both, especially on dilatation of the heart's right chamber.

Passive Ascites, unattended with *Dropsy* elsewhere. This is easily distinguished from solid tumors or obesity; but it may resemble *ovarian dropsy*.

Diagnosis of Ascites and Ovarian Dropsy.—In the early stages, in ascites, the enlargement of the abdomen is uniform on both sides; in ovarian dropsy, it is confined to one side. In the former, when the patient lies on her back, the flanks bulge out; not so in the latter, nor in pregnancy. The ovarian may distend the abdomen greatly, and then not be distinguishable from ascites, by the shape. Pressing suddenly with the tips of the fingers perpendicularly to the surface, tells of liquid below, by the sense of displacement of fluid, and of impinging on some solid. To detect the fluid by *percussion*, lay the left hand flat against one side of the abdomen, and strike the other with the right, and the shock of the fluid will be felt. The more the liquid, and the thinner and tighter the walls, the more sensible the fluctuation. When there is only a little fluid, place the finger of one hand against the most depending part, and strike near it with a finger of the other hand, and fluctuation will be distinct, if fluid exist. As liquid in an ovarian cyst may also be thus felt, fluctuation is equivocal. In ascites, as the liquid subsides and the intestines float in every posture of the patient, the upper parts give a resonant sound on percussion; but the lower,

a dull one. But it is not so in ovarian dropsy. In ascites, the patient being supine, the epigastric and umbilical regions are tympanitic; in ovarian dropsy, the latter at least is dull, unless there be air in an ovarian bag. The distension in ascites may be so great that the intestines may not reach the surface, or the intestines may be tied down, and so not reach the surface; in both these cases percussion gives a dull sound.

In ascites, there is almost always constitutional suffering, a sallow complexion, debility, emaciation; in even extreme cases of ovarian dropsy, the health is scarcely affected. In these advanced stages, ascites and ovarian dropsy, by pressure, interfere with the diaphragm, and cause dyspnea; or press on the inferior cava and its branches, and cause anasarca of the legs and thighs; or they cause a peculiar gait, like that of a woman big with child. Do not mistake a distended bladder for dropsy.

Other Dropsies.—There are *omental* dropsy, dropsy of the *fallopian tubes*, of the *uterus*. Cysts are found in the *kidney*; also connected with the *liver*. These last are often, probably always, the effects of hydatid growths. These must be discovered by their own peculiar circumstances; they are uncommon.

LECTURE LXVII.

CHRONIC ASCITES.—*Pathology, &c.*—In passive and chronic ascites, percussion or palpitation does not cause pain. Dropsy is sometimes the result of bygone inflammation, which has spoiled the absorbing function of the membrane. The main cause, independent of inflammation, of true ascites, is some impediment to the abdominal venous circulation. This impediment is most often caused by disease of the *liver*, especially by that contracted state of it called *cirrrose* or *hobnail liver*. This liver, hard, contracted, and knobby, is caused by the thickening of Glisson's capsule, and shrinking of the areolar tissue of the organ. Sometimes this liver can be felt through the abdominal walls.

Habitual intemperance is the chief cause of cirrhose. Tumors in the liver, by pressing on a venous trunk, may cause dropsy; so may abdominal tumors, cancer of the pylorus, of the head of the pancreas, &c. Often, in ascites, as an effect of the portal obstruction, the *spleen* is found diseased and enlarged.

OVARIAN DROPSY.—*Pathology, &c.*—In its ordinary form, this consists in disease and enlargement of one or more Graafian vesicles, or enclosed ova. There may be only one cyst, small or very large; or there may be many distinct or united. The walls may be thin and flexible, or firm and thick. The cyst may spring from a small pedicle, or adhere to contiguous parts. Its inner surface may be smooth or not. Its fluid may be thin or consistent, limpid or glutinous, opaque or transparent, colorless or of various tints. The generally irregular surface of the multilocular ovary may often be felt externally. Ovarian dropsy may progress rapidly or very slowly, destroying life by its bulk and pressure, in a few months, or continuing a mere burden for years. Often it stops entirely, or only for a time in its rapid progress. Its growth or position may embitter and abridge life, and interfere with the passage of the urine, feces, or fœtus. Single cysts may spring sometimes from other parts of the uterine appendages than an ovary. Ovarian dropsy is not a *malignant* disease, though these sometimes exist. Often hair, fat, bones, &c., are found in the diseased ovaria, even of virgins. Ordinary ovarian dropsy does not com-

mence before puberty, nor often after the child-bearing period. Virgins, barren and fruitful wives, are subject to it. Its existence may account for sterility. During its progress the catamenia may be more or less regular, or entirely suspended.

Treatment of Ascites.—Ascites or ovarian dropsy is seldom cured. The former is more certainly fatal, and, perhaps, oftener cured. When passive ascites has crept on without pain, fever, or marks of inflammatory action, evacuate the liquid by diuretics, for renal disease is seldom conjoined with hepatic ascites, except occasionally in cases of intemperance. When diuretics fail, and there is no diarrhea, use also hydragogue purgatives. In hepatic disease try the influence of mercury. The disorder being chronic, introduce it gradually. Some think the iodide of potassium especially useful in hepatic ascites. Compounds of mercury and iodine may be applied by inunction to the abdomen, and particularly to the right hypochondrium. Some think the diuretic, muriate of ammonia, acts on the liver in the same beneficial manner as mercury; besides, it causes less distress and inconvenience. Sometimes the biliary excretion greatly improve after the daily use of sal-ammoniac, combined with the extract of taraxacum. When medicine fails to remove the liquid or to cure its causes, and when the liquid augments causing urgent distress, *paracentesis* affords temporary, and possibly permanent relief.

Treatment of Ovarian Dropsy.—When the enlarging ovary is painful or tender from the first, try *antiphlogistic* means. But only temporary relief is likely afforded by any measure. A physician may fail in all his cases, though he try early frequent topical bleeding and the specific effect of mercury, diuretics and drastic purgatives; liquor potassæ and the preparations of iodine. These remedies have succeeded. Occasionally the tumor bursts into the peritoneum, where the fluid is absorbed, or oftener causes fatal inflammation. Or, adhesion having taken place, it may burst into the bowels or bladder, or through the abdominal walls. Perhaps ovarian tumors sometimes disappear entirely. Fecal matter may cause apparent ovarian tumors.

Extirpation of the Ovarian Sac.—The results of attempts at extirpating ovarian tumors are rather discouraging; for, large tumors, being usually multilocular with firm walls and thick internal septa, and, therefore, collapsing but little when punctured, the abdomen must be opened from the sternum to the pubes; moreover, these tumors most commonly adhere to contiguous parts. But the operation has been successful. A more promising plan is, expose the surface of the ovary by a small incision through the abdomen and peritoneum, secure the cyst by a tenaculum or ligature, puncture it, and, when empty, gently draw it through the orifice, tie a thread around the stalk, cut the cyst off, return the parts and close the wound. But small and not inconvenient tumors should be let alone. Objections to this operation are, that multilocular tumors with solid walls can scarcely be drawn through the opening; and adhesion may prevent success. If the tumor be readily movable hither and thither, without pain, by the finger applied externally, it is probably unadherent. Previous tapping or peritonitis may have caused adhesion. If this operation be tried, it should be while the enlarging tumor is yet of moderate bulk, before the peritoneum is much stretched and adhesion likely.

Paracentesis Abdominis.—With very few exceptions, *paracentesis* should not be tried in ascites or ovarian dropsy until it seems absolutely indispensable. Fatal peritonitis may result from the operation, or (in ovarian dropsy) from the escape of fluid into the abdomen. To obviate or remedy this danger, thoroughly empty the bowels by some mild purgative the day before the operation, and keep them quiet for several days after by

moderate doses of opium. To prevent the fainting, &c., which may follow the removal of the pressure of the water, pass a sheet round the patient's body, and tighten it as the fluid escapes—continue this pressure for a while, and at length gradually withdraw it or keep the patient during the operation in the horizontal posture, on his side. Take care that the trocar does not pierce the intestines. Paracentesis seldom cures; it is simply a temporary relief. The liquid very seldom fails to collect again, and often more rapidly than before. The kidneys very seldom resume their activity. Often, tapping must be repeated again and again. Tapping in abdominal dropsy ought seldom to be performed unless the liquid causes painful distension, or great dyspnea, or positive inconvenience or suffering. *Acupuncture*, the passage of grooved needle instead of a trocar, has been said to do good. In mere passive ascites, tapping is seldom often repeated, for the dropsy returns and the health and strength, in most cases, rapidly decline and the patient sinks. Early death sometimes occurs in ovarian dropsy also—yet tapping can commonly be oftener repeated than in ascites, without serious injury to the health. Sometimes the liquid re-accumulates very rapidly, sometimes slowly, occasionally not at all. In ovarian dropsy, when tapping is essential to the comfort and continued existence of the patient, it brings relief and often prolongs life. But when performed under less pressing circumstances, it tends to shorten life. Dr. Bright thinks few survive the first tapping more than four years—perhaps he should have made it two years. Mr. Isaac Brown advocates *pressure* in ovarian tumors. He makes the gums tender with mercury, and keeps them so for some weeks, giving at the same time diuretics and tonics. Meanwhile the tumor is steadily compressed by a flannel bandage. When the swelling has decreased or ceased to increase, it is emptied by tapping. Then firm and constant pressure is repeated by pads and bandages and the medicines continued for at least six weeks. Mr. Bambridge keeps open the orifice made by the trocar. In most of his cases the discharge became puriform, grew less and finally ceased. Sometimes the opening closed. Sometimes a fistulous opening remained. The vagina seems a convenient place of outlet. The cyst has been injected with a solution of iodine. With what object is not apparent.

LECTURE LXVIII.

ACUTE GASTRITIS.—Acute inflammation of the peritoneum, as of serous membranes generally, usually spreads rapidly over the whole membrane. Not so with the other tissues of the alimentary canal. *Spontaneous* acute inflammation of the whole or a part of the stomach is rare. *Gastritis* is inflammation of the *mucous membrane* of the stomach.

Symptoms.—The symptoms of acute gastritis, arising from irritant poisons or any other cause, are pain, usually of a burning kind, in the epigastrium; frequent vomiting, especially when any thing enters the stomach; heave or tension of the upper part of the abdomen; fever of a low type; a small and weak pulse, which, at first, is generally sharp and hard; paleness and faintness, with collapsed features, cold extremities, and a damp skin. There is a strong tendency to death by *asthenia*. The pulse becomes more distinct and full under early bleeding. The above remarkable sympathy between the heart and stomach is further shown by the facts, that a smart blow on the epigastrium may suddenly stop the heart and induce mortal syncope; and that an ounce or two of brandy will

sometimes at once revive a person in a state of extreme exhaustion and faintness. Perhaps the sickening pain in the stomach depresses the circulation. The pain is augmented by pressure. The breathing is short. In exquisite cases produced by chemical or mechanical irritants, the peritoneum is probably more or less involved; the pain is pricking and burning, with great anxiety and restlessness; thirst is extreme, while every thing, even cold water, is instantly vomited. Hiccough may be absent. It sometimes occurs early; but generally late, when the patient is sunk and much debilitated. The bowels are sometimes bound; sometimes, especially in cases of corrosive poison, dysenteric diarrhea ensues, with much griping and tenesmus. The symptoms occur in varying combination and severity. Intense gastritis may be fatal within even twelve hours. When fatal, it is generally so in a few days. Death takes place by fainting, with a remission of the pain, sometimes sudden, sometimes just before death.

Anatomical Characters.—These are redness of the mucous membrane, softening, sloughing, and even (in cases of strong corrosive poisons) perforation of all the coats of the stomach. But *redness* of the mucous membrane, caused principally by venous congestion, may exist *independent* of inflammation. The *inflammatory* redness is generally limited. The products of inflammation, when present, show the redness to be inflammatory. *Softening* can be attributed to nothing else than inflammation, unless it be to decomposition, and this, in mucous membrane, takes place slowly and late.

Causes.—Large draughts of cold drink, especially if *sour*, as cider, &c., taken when the hot body is rapidly losing its heat, are apt to cause acute gastritis. The same may result from the ingestion of very large quantities of food at one time, especially during convalescence from any serious disorder. Certain poisons, as corrosive sublimate, arsenic, introduced into the body through other channels, will cause inflammation of the membrane, though they do not touch it.

Treatment.—Early, if the pain be severe, try venesection, though the pulse be small and feeble. Take a small teacupful of blood, meanwhile watching the pulse. If it does not grow weaker, and still more, if it becomes fuller and stronger, take another or more cupsful, according to circumstances and the effects produced. Apply leeches to the epigastrium, and cover the bleeding bites with a soft, light poultice. Protect the heart's action by strictly enjoining the horizontal posture. Cold water, if retained, is the best medicine to give by the mouth; purgatives by the mouth are rejected, or likely increase the inflammation. Enemata are very useful; of warm water, if the bowels are not much confined; of purgative material, if they are. After clearing out the bowels, or when they are loose and irritable, opiate injections (as laudanum, gutt. xxx or xl, in starch or gruel $\frac{3}{4}$ iii or iv,) do much good. They often tranquillize the irritable stomach and check vomiting. Pursue these measures till the inflammation has subsided. Remove *corrosive* substances as soon as possible from the stomach, or give specific antidotes. Nutriment, if retained, must be given in small quantities, liquid at distant intervals, barley water, milk and water, arrow-root, smooth gruel, &c.

CHRONIC GASTRITIS.—This is common; is not immediately dangerous; is often recovered from. It deranges the function of the stomach, and gives rise to the many symptoms of *dyspepsia*, though this is often entirely independent of inflammation. When, after death, the coats of the stomach are found thickened or ulcerated, we know that chronic inflammation has existed. A larger or smaller part is unnatural in color, often gray, from the action of the gastric juice. There may be one ulcer, or a few, or occasionally many. They vary from the size of a split pea to that of a shilling,

sometimes with no surrounding vascularity or thickening, sometimes with thickening, sometimes with rounded, elevated *edges* only. The ulcer may penetrate to, and cause inflammation of, the peritoneum, and adhesion of the stomach to neighboring parts. Death may ensue before or after adhesion, from gradual exhaustion and suffering. Or the ulcer may eat into a large blood-vessel in the stomach, and cause fatal hemorrhage. Or it may perforate the unadherent stomach, and, permitting food, &c., to enter the peritoneum, cause intense inflammation and speedy death. Or it may *heal*.

Symptoms.—These are pain or uneasiness in the epigastrium, increased by pressure or food, or perhaps felt only during digestion; flatulence and eructation; vomiting, at first only occasionally, of mucus and of the meals; loss of sleep; languor and debility; often some acceleration and hardness of the pulse; more or less thirst; dry skin; scanty and deep-colored urine; a red tongue, especially so at its tips and edges, patchy and fissured perhaps, or smooth and glossy like a slice of raw meat; often a tender throat and unnaturally vascular pharynx and palate. The pain in the epigastrium is often circumscribed and often felt at the same time in the back, or alternates in the back, just below the shoulders. It begins on eating or soon after, especially if the food be hot or stimulating. It usually continues till the food passes the pylorus or is vomited. Pressure, exercise and anxiety augment it; recumbency mitigates it; sour eructations often attend it. If hæmatemesis supervene, ulceration is almost certainly present. Sometimes there is no pain, but a sense of heat or acidity. Sometimes there may be, from first to last, only uneasiness after meals, which subsides in two or three hours entirely.

Treatment.—In urgent cases enjoin rest in the recumbent posture. All food likely to give pain should be discontinued. Tepid milk alone, or thickened with bisuit-powder is the very best of its kind. The stomach should never be *distended* by food, which should be taken in small quantities and often, as one or two tablespoonfuls every two hours. Counter-irritation may relieve severe pain; as the mustard poultice, or a stimulating liniment containing opium, applied to the epigastrium or back. Bismuth in doses of grs. viii or x, sometimes combined with grs. v of compound kino powder, is often good; or grs. iii to v of the compound soap-pill, occasionally. Small quantities of ice swallowed in hemorrhage does well; also nutritive enemata. Regulate the sluggish bowels; employ an aloetic or colocynth pill. The naturally acid juice sometimes causes softening and perforation of the stomach, even after death. This solvent property may be arrested by *alkalies*, *alcohol*; or neutralized, after death, by transudation of the alkaline serum of the blood. This juice acts strongest in warm seasons and places. When it passes into the œsophagus or duodenum it affects them also; and when perforation occurs it injures neighboring parts, spleen, intestines, diaphragm, lungs, liver.

CARCINOMA OF THE STOMACH.—This is common, very dangerous, sometimes obscure and difficult to diagnose.

Symptoms.—*Pathology.*—Sometimes there is no symptom, or none referable to the stomach, or often none pathognomonic of cancer there. Food is apt to cause great distress, sometimes immediately, sometimes not for an hour or two; sometimes there is much pain, sometimes none; sometimes there is continual vomiting, sometimes little or none. Generally there is more suffering and pain when the disease is at or very near the orifices, cardiac or pyloric. If at the cardiac, this distress is over when the food or drink gets *into* the stomach; if at the pylorus, the food readily enters the stomach and remains some time, then uneasy sensations arise, and the meal is apt to be vomited up. There is sometimes noticed "that pinched and anxious expression of countenance, and that peculiar yel-

lowish hue, so significant of organic visceral disease." Sometimes *hypertrophy* exists with the cancer; sometimes it exists alone. Cancer of the stomach, being mostly of the scirrhus kind, is accompanied less frequently than some other modes of the disease, by cancer elsewhere. The secondary formations are found chiefly in the *liver*. In feeble and delicate persons, the muscular coat of the pylorus, instead of becoming thick from the impediment to the passage of food into the duodenum, gets very thin; meal after meal is retained, the stomach is enormously distended, and at distant intervals relieved by vomiting, till, becoming unequal to the effort, death results. Sometimes sickness and vomiting exist when the stomach contains no food; the rejected matter is of various kinds and appearances. Often it resembles coffee grounds, being, no doubt, altered blood. This is a pregnant sign of *organic* mischief in the stomach. Emaciation denotes probably structural disease. Palpable tumors strengthen the unfavorable diagnosis. They indicate disease of the pylorus rather than of the cardia. Sometimes the symptoms remit remarkably, but only for a time. Frightful disorganization is at length produced, ulceration, perforation of the stomach, adhesion, and death. Cancer of the stomach rarely happens before the age of thirty-five; it progresses steadily and generally kills in twelve or fifteen months.

Treatment.—This is palliative. Anodyne enemata are often as good in relieving pain as opium by the mouth; and, besides, their constipating properties are more easily obviated. Nutritive injections are proper, if food by the mouth is rejected. Palliate other symptoms by remedies mentioned in treating dyspepsia.

LECTURE LXIX.

HEMORRHAGE FROM THE STOMACH.—This most commonly takes place from the capillaries, but occasionally by the rupture of a blood-vessel, caused generally by chronic ulceration.

Symptoms.—The symptoms are first those of chronic gastritis; next, faintness or syncope from the sudden loss of a large amount of blood; and then vomiting of blood—*hæmatemesis*. *Hæmatemesis* from ulcers is not absolutely hopeless, for the ulcers may heal.

Capillary hemorrhage may be, 1, Idiopathic; 2, Vicarious of some other habitual hemorrhage; 3, Dependent on injury or disease of the stomach itself; 4, A consequence of disease elsewhere which produces, mechanically, plethora of the stomach; 5, A result of a morbid state of the blood, and one symptom of a more general disease; as in purpura, sea scurvy. Idiopathic hemorrhage, *i. e.*, independent of any apparent change of texture, is rare.

Causes.—Vicarious hemorrhage, especially of menstruation, is *very* common. That vicarious of menstruation is hardly ever dangerous, though it may occasionally be *fatal*. Gastric hemorrhage may be caused by cancer prior to ulceration, or by the erosion of a large vessel, or, more commonly perhaps, by oozing from the ulcerating surface. Strongly irritating poisons or passive congestion in the stomach often causes hæmatemesis. The obstruction to the blood may depend on heart disease or often on abdominal changes, especially in the liver and spleen, the former being frequently shrunken, the latter enlarged by the blood. The enlargement of the spleen and hæmatemesis are not always to each other as cause and effect; for very often they both are effects of a morbid state of the liver or other abdominal

parts, which impedes the blood in the vena portæ. In gastric hemorrhage from hepatic obstruction there is almost always *intestinal* hemorrhage also, or, at any rate, almost always black alvine evacuations (*melena*) like tar. In the advanced stages of utero gestation, gastric hemorrhage may happen, independent of *disease*, from pressure of the gravid uterus. This hæmatemesis does not depend on suspension of the catamenia, for it is not periodical, nor does it occur during the *earlier* months of pregnancy.

A *large* amount of blood in the stomach, perhaps from distension of it, appears to have a nauseating and emetic effect.

The Vomited Blood.—When vomited, the blood comes up in large quantities, usually of a dark color and more or less coagulated; sometimes some of the clots are partially deprived of color. The degree of coagulation of the blood, and of its separation into serum and crassamentum, depends on the time it remains in the stomach; and this again seems to bear a proportion to the rate of its effusion. The dark color of the vomited blood may have taken place *before* its extravasation, as is likely the case in the *black vomit* of yellow fever; but *after* its extravasation, the darkness is often owing to the action of the gastric acid, the degree of darkness being in proportion to the amount of acid, and the intimacy of the mixture. Sometimes the blood is not much changed; sometimes it is grumous, brown, chocolate-colored, or like coffee grounds. This generally denotes *organic disease*. The inky fluid of *melanosis*, the dark brown or almost black spots sometimes seen in the lining of the stomach or beneath it, and the slate-colored patches of chronic gastritis, depend on the action of this acid. The dark color of blood in the intestines depends on gases there, sulphuretted hydrogen, &c. The gastric acid, after death, may darken the blood while still in the sub-mucous vessels. So do strong acids, introduced into the stomach from without, as sulphuric acid, or the vegetable oxalic acid, taken as a poison.

• *Diagnosis.*—The diagnosis of *hemorrhage from the stomach* is often obscure; for there may be no hæmatemesis even sometimes when the hemorrhage is profuse and fatal, but especially when small and slow. The blood may pass by stool and not be noticed or recognized; or if recognized, its source may still be uncertain. Blood may be sometimes swallowed involuntarily and afterwards vomited, as sometimes in cases of slow bleeding from the lungs, fauces, mouth, or nasal cavities. This is apt to happen during sleep, especially in children. As this blood is coagulated and considerable in quantity, thus resembling gastric hemorrhage, look cautiously into the general history and symptoms and examine the mouth, fauces and nostrils. Sometimes blood is swallowed and again vomited by impostors.

Diagnosis of Hæmoptysis and Hæmatemesis.—In copious *hæmoptysis*, the blood issues from the mouth in gushes, as it does in hæmatemesis. In the former the blood may occasion real vomiting or an action *resembling* it; in the latter it may provoke a choking cough. To decide, therefore, whether the blood comes from the *lungs* or stomach, remember that the *vomiting* of blood is commonly preceded by a sense of weight and uneasiness in the epigastrium, and by nausea; it is also, oftener than hæmoptysis, ushered in by paleness of the face, dimness of vision, threatening syncope, or actual fainting. These symptoms follow the *hemorrhage*, but precede the *hæmatemesis*, or vomiting. *Hæmoptysis* is wont to be announced by dyspnea, cough, tickling in the throat and a sensation of *bubbling* in the thorax. Most commonly some sputa, more or less bloody, are *coughed up* at first. Generally, copious hæmoptysis goes on in a succession of mouthfuls, for some time; whereas there is, mostly, only one full vomiting. At any rate, after the full hæmoptysis, smaller quantities of blood are *coughed up*; but, usually, a few hours after hæmatemesis, slight griping pains come on in

the abdomen, and some blood passes from the bowels. Look to the symptoms and past history of the patient for a diagnosis.

Treatment.—Treat the disease of which the hæmatemesis is a symptom. But if the disease or cause is not known, or out of reach, treat the symptom. Cases of *melæna* require hard purging. You may prescribe calomel, grs. v, every night, and a black dose every morning till the stools lose their pitchy color. Purge, though the patient be blanched by the previous hemorrhage and have a feeble and irregular pulse. At the same time sustain the patient by a full allowance of nourishing broths. If there be no irremediable change of texture in the liver, the recurrence of the hemorrhage may often be obviated by a proper regulation of the habits and diet. The ancients purged with hellebore. In *melæna* from mechanical congestion, *styptics* are worse than useless; they are more adapted to hemorrhage from bleeding vessels. In purely passive hæmatemesis, dependent on some modification of the circulation, astringents may be applied to the part. In gastro-intestinal hemorrhage, oil of turpentine in small doses, as ℥ xx to 3 ss, every four or six hours, is thought to be specific. Keep the patient cool and quiet; his drinks should be cold; even ice is often grateful and effectual. Ordinary measures failing, try acetate of lead, or even Ruspin's styptic, or solution of gallic acid. If there be fever also, venesection may be proper and necessary, also refrigerent remedies; and if, with or without much fever, there be tenderness at the epigastrium, apply leeches or a blister. In gastric hemorrhage vicarious of menstruation, try to stop it by iced drinks, &c.; and at the same time solicit the natural discharge by placing leeches on the groins just before the vicarious menstruation is expected, and by putting the patient's feet at the same time into hot water, or even laying her in a warm hip-bath.

LECTURE LXX.

DYSPEPSIA.—This means some evident derangement in the process of digesting and assimilating food, and especially a faulty performance of the functions of the *stomach*. Cullen's definition of dyspepsia is, "anorexia, nausea, vomitus, inflatio, ructus, ruminatio, cardialgia, gastrodynia; pauciora saltum vel plura horum simul concurrentia, plerumque cum alvo adstrictâ, et sine alio vel ventriculi ipsius, vel aliarum partium, morbo." The combinations of these symptoms are very numerous.

Physiology of Digestion.—In the stomach the food is converted by the gastric juice into chyme; in the duodenum the chyme, mixing with the bile, pancreatic secretion, and intestinal mucus, is separated into two parts: the chyle, which is taken into the blood by the veins or lacteals, and the excrementitious part, which is carried out of the body. The gastric juice oozes from the mucous surface in minute drops, and then only when some solid is in the stomach; it is always *acid*; its solvent principle is called *pepsin*. Chyme is also acid. The food reaches the duodenum in from two to five hours. Liquids disappear more speedily by absorption or through the pylorus. For digestion to be perfect and easy, the food must be minutely divided, as by *mastication*, especially in cases of weak stomachs. In the stomach gases are extricated or acids formed from the half-digested mass, which is vomited perhaps, or it passes through and irritates the intestines. Therefore, dyspeptics should eat slowly and masticate their food well. The gastric juice has no power upon the green coloring matter of certain vegetables, the husks of seeds, the rinds of many fruits. What-

ever passes the stomach untouched by the gastric liquor, passes undissolved through the whole alimentary canal. When the digestive powers are active, but the bowels slow, such substances may be useful by stimulating the peristaltic action of the bowels; as brown bread, unbruised mustard seed. But failing to act, these substances may accumulate and cause serious disease. Indigestible matters may remain in and disturb the stomach for days, even weeks. An emetic is the remedy. They are sooner or later vomited up. The acid developed in the stomach is more or less, in health perhaps entirely, neutralized by the alkali of the bile. Bile is the natural stimulus of the intestines; digestion and assimilation may go on without it, but the bowels are usually sluggish. The state of the biliary functions have no direct influence in producing mere dyspepsia.

Anorexia.—Treatment.—*Anorexia*, want of appetite, is sometimes almost the only symptom observable. Hunger is not caused by the action of the gastric juice on the empty stomach, for in health it is not present in the empty stomach. Neither is it caused by the contraction of the muscular fibres of the stomach, for, during health, the empty stomach is always contracted. It no doubt arises from some particular condition of the gastric nerves. Bad news will destroy the keenest appetite. Sometimes there is no *anorexia*. The appetite may even be morbidly craving, or capricious. *Treatment.*—*Anorexia*, when the only symptom, may be remedied often by using bitters, or the mineral acids, twice or thrice daily, for some time. Quina, columbo, gentian, quassia, are useful; also dilute sulphuric and nitric acids, or a mixture of the nitric and muriatic.

Nausea.—Treatment.—*Nausea* and *vomitus* are sometimes the most distressing symptoms. Sometimes the nausea comes on soon after taking food. Sometimes there is no nausea, but after a time, generally an hour or two, the food is vomited. The vomited matters are most often sour; often they are mixed with bile, owing to the inverted action of the duodenum. *Treatment.*—Any morbid irritability of stomach is often allayed by carbonic acid; as in the effervescing saline draught, made with carbonate of potash or soda, and lemon-juice. Sometimes the mineral acids are better; sometimes alkalies, as liquor potassæ, or lime-water. Other means failing, small doses of opium are sometimes good; also opiate enemata, opium plasters to the epigastrium, blisters there. A few drops of chloroform swallowed in water sometimes do good. In obstinate sickness, hydrocyanic acid is very useful, given alone, or mixed with the effervescing draught, or with a few grains of the sesqui-carbonate of soda. Creasote is sometimes good, especially if inflammation is remote. In chronic vomiting, independent of disease elsewhere, as the head, kidneys, uterus, give only as much bland and nutritious food as the stomach will retain.

Inflatio.—Treatment.—*Inflatio*, *Ructus*, flatulence and belching.—The gas in the stomach is sometimes extricated from the undigested food; sometimes, apparently, it is secreted by the stomach. *Treatment.*—When the delaying a meal causes emptiness of the stomach, and flatulence, the remedy is evident. Flatulence is often removed by warm aromatics and carminatives, particularly peppermint water. Flatulence, which follows eating, may generally be prevented by taking, just before meals, extract of rhubarb grs. v or vi, with or without a grain of cayenne pepper, or, better, nitro-muriatic acid in small doses, half to one hour before eating. When the belched gas flavors of sulphuretted hydrogen, charcoal or creasote sometimes is serviceable, though the best cure commonly is an emetic. When acid matter is brought up, *ruminated*, an alkali, as a teaspoonful of *sal volatile*, or grs. x of carbonate of soda, may remedy the flatulence.

Cardialgia.—Gastrodynia.—Treatment.—Often, in indigestion, there is

scarcely any pain. Sometimes it is tormenting. *Cardialgia* is *heart-burn*; *gastrodynia* is severe transient pain, *spasm*, or *cramp*, of the stomach. *Treatment*.—Sometimes there is pain when the stomach is empty, even without flatulence. The cause is likely acrimony of the gastric fluids. Food gives relief; often also alkalies or absorbent medicines; a teaspoonful of the aromatic spirit of ammonia, in a wineglass of camphor julep, or 3 ss of magnesia. With this pain there is a slow pulse, coldness of the surface of the body. It is helped by the recumbent posture and hydrocyanic acid. When gastric pain occurs *immediately* after meals, and continues during digestion, or till vomited, we suspect chronic inflammation, or ulceration, or some undue sensibility of the lining of the stomach. The remedies of this are mentioned in the last lecture. Nitrate of silver, in small doses, has been useful. When uneasiness occurs presently after a meal, with weight at the pit of the stomach, and indisposition to bodily or mental exertion, digestion is slow and difficult, for the gastric juice is scanty. Promote the secretions of the stomach; give ipecac. in small doses, or rhubarb before meals, or condiments in the food, salt, mustard, cayenne pepper. The pain sometimes does not begin till from two to four hours after a meal, but continues for several hours. Often there is also pain and tenderness of the right hypochondrium. The pain depends on acidity in the *primæ viæ*; for an alkali generally, even a cup of warm tea often, stops or mitigates it. The recurrence of the pain is often *prevented* by a small quantity of alkali in some aromatic water immediately after meals. Dr. Abercrombie found sulphate of iron good, combined with aloes gr. i, and aromatic powder grs. v, taken thrice daily. He praises lime-water also, and small opiates, and a combination of bismuth and rhubarb. Bismuth is very good in some cases. Occasionally pain succeeding a meal, with the deposit of lithates in the urine, is more benefited by mineral acids than alkalies. The presence of phosphates might guide us in these cases. *Gastrodynia* is often accompanied by a sense of distension, much anxiety, and great restlessness; in females, often also with hysterical symptoms. Much air is sometimes extricated; the pain shoots to the back and between the shoulders. Probably it is sometimes neuralgic; it is often intractable; occasionally it yields to carminatives, a few drops of cajuput oil suspended by mucilage in aromatic water. Relief is obtained by briskly acting on the bowels by means of a strong purgative enema. The pain is often removed by a mustard poultice laid on the epigastrium. Opium is often useful; also bismuth, and cordials; especially prussic acid, which often cures permanently. *Spasm* of the stomach in gouty persons is called *gout* in the stomach. The pain is in sudden and severe paroxysms, and removable, generally, by laudanum and stimulants, as brandy, or by the mustard poultice. If inflammatory, stimulants aggravate. Gouty cases should be watched with apprehension.

Pyrosis, water-brash, consists in the eructation of a thin watery liquid, sometimes sourish, but usually tasteless, and often said to be cold. It usually comes on in the morning, when the stomach is empty. The first symptom is pain at the pit of the stomach, and a sense of constriction of it. The erect posture increases the pain, which is often severe. After a time the eructation comes on.

Treatment.—Pyrosis is sometimes a symptom of organic stomach or liver disease. When not, it generally yields to opium, especially if combined with astringents, as *pulvis kino compositus*. When the bowels are confined, administer an aperient daily, while the kino and opium are given; as the watery extract of aloes, or the confection of senna, or the compound colocynth pill. Unwholesome food should be avoided, and a generous diet used, with some meat.

Sometimes fluids of a faint acid smell are vomited, generally in a copious, sometimes in an enormous, amount, and often after a night spent in distress from a sense of burning and distension and bubbling in the epigastrium. These indicate usually some structural and incurable stomach disease. Emptying the stomach gives relief. Alkalies relieve and remedies that prevent fermentation. Salt and creasote, in pill form, may be taken with the meals. Sulphate of soda, grs. xv to 3 i, in water, may be given soon after the meal, or when fermentation is commencing.

Costiveness often accompanies or aggravates, if it does not produce, dyspepsia. Promote the evacuation of the bowels by bran bread, or a few grains of rhubarb or aloes just before dinner, or an aperient pill at bed-time. *Diarrhea* is sometimes associated with indigestion; then there is usually an excess of acid in the *primæ viæ*. The treatment is obvious—antacids and astringents, chalk, bismuth, catechu, kino, rhatany, logwood.

Indigestion is often accompanied by pain in the head, with some confusion of thought or loss of mental energy. There are often nausea and vomiting with a violent headache; this is *sick-headache*, or *bilious headache*. Sometimes morbid conditions of the urine arise from faulty digestion or faulty assimilation. Indigestion may produce palpitation of the heart, irregular pulse, asthma; this is owing partly to sympathy between the parts; partly to flatulence which impedes the action of the diaphragm, lungs and heart. Dyspepsia is often an effect of phthisis, leucorrhea, amenorrhea, and chlorosis. Indigestion may indirectly develop phthisis by causing debility. *Hypochondriasis* sometimes accompanies dyspepsia. This consists in a languor in all undertakings; sadness, timidity, apprehension of the future; a morbid attention to one's sensations and health.

General Rules for Treating Dyspepsia.—Suit the quantity of food to the powers of the stomach. Prohibit substances as food of difficult solubility; also avoid mixing those of different degrees of solubility. Six hours should elapse between meals. In fevers and inflammatory disorders prohibit flesh meat, for it stimulates. In chronic gastritis or morbid sensibility of the stomach, order a farinaceous diet and milk. Animal food is more easily digested than vegetable, and causes less flatulence. But a mixture of the two is best, as well-roasted or boiled flesh or fowl, with a moderate portion of well-cooked vegetables. Meats, hardened by culinary art or by condiments, all cured meats, ham, tongue, sausages, &c., avoid. Mutton is thought more digestible than beef. Pork, its lean part at least, is less so than either. Avoid raw vegetables, salads, cucumbers and pickles. Most dyspeptics would be better without liquor, malt or other kinds. Sometimes a moderate quantity helps digestion; but there is always danger of ultimately injuring the stomach by the habit. Mental distress, mental toil, over-much study, want of exercise, may cause dyspepsia. To treat hypochondriacs, gain their confidence, not by pronouncing their ailments imaginary, but by hearing them, by showing an interest in their case, by pronouncing them curable, and by prescribing for them. Prescribe change;—change of air, of place and scenery, and of society.

LECTURE LXXI.

ENTERITIS—Inflammation of the Bowels.—*Ileus*, whether in inflammatory cases or not, consists in an inverted action of the bowels by which their contents are carried into the stomach, and then vomited. *Gripings, tormina*, are transitory twisting or wringing pains occurring in diarrhea.

Symptoms.—The symptoms of enteritis are those of colic, *i. e.*, pain in the abdomen, generally around the navel, vomiting, and constipation; and those of peritonitis superadded, *i. e.*, pain in the abdomen increased on pressure, and fever. Sometimes enteritis begins with distinct rigors and is attended by thirst, a hot skin, and a hard and frequent pulse. But often it begins insidiously with colicky symptoms; the pain, at first, is not much augmented, nor is even eased, by steady pressure. If we mistake colic for enteritis, the error is not serious; but the opposite mistake may be fatal. The remedies of enteritis will not aggravate, but may relieve mere colic; while the remedies of mere colic, stimulants, &c., are very dangerous in enteritis. Indeed this treatment of colic may urge it into enteritis. In doubt, treat for enteritis. The diagnosis between the pain of colic and that of enteritis is given under the head of *Colic*. The nausea and vomiting are often most distressing, the patient immediately rejecting food, medicine, &c., when swallowed, and having fits of retching when the stomach is empty. Sometimes matters, like liquid feces, are vomited. The pulse, that was strong and hard at the outset, soon becomes small and wiry, or weak and like a thread. In bad cases, as the disease proceeds, the abdomen becomes tympanitic; hiccup sometimes comes on; the pulse intermits or beats irregularly; the extremities grow cold; the features are ghastly and sharpened; cold sweats break out; the pain ceases perhaps; and the sphincters relax. Generally the intellect is clear to the end, though occasionally delirium occurs late in the disease. Death begins at the heart by way of asthenia.

Anatomical Characters.—*Causes.*—The above symptoms are often met with in strangulated hernia, and most commonly in enteritis caused by the forcible closure of the bowels. The obstruction in the bowels may be caused by bands of lymph; by intussusception; by chronic thickening of the coats of the intestine, thus narrowing the tube; by tumors pressing from without; by substances within; by a small hernia at one of the orifices: in all which cases a chronic disorder passes finally into acute inflammation. Sometimes there is no mechanical impediment to account for the constipation. Whether there be or not, the inflamed part is red or dark, often very dark, distended by gas or liquid matter, smeared perhaps with lymph or pus, covered often on its peritoneal surface with lymph, or adherent to contiguous parts. The part beyond the inflammation is pale, contracted, and apparently healthy. The line of demarkation is abrupt and strong in mechanical obstruction; and usually so in other cases. The dark color is no evidence of gangrene, if the bowels be firm and the gangrenous odor be wanting. Enteritis, independent of mechanical obstruction, may be caused by cold and wet applied externally, especially to the feet and legs, and especially also, perhaps, soon after meals. The obstruction *within* the bowels may be caused by hardened feces; magnesia or chalk concreted around a nucleus perhaps, as a cherry stone, &c.; unbruised mustard-seed, carbonate of iron. The cause of obstruction is seldom known during life. That from *intussusception* is often attended by *blood* in the stools; sometimes the bowels slough away and are passed *per anum*.

Treatment.—Avoid stimulants and prescribe the horizontal posture. Bled from the arm, though the pulse be small; the earlier the better. If the pulse becomes fuller and more distinct, nay, if the patient does not become faint, the first bleeding should be large. The abdomen, especially the more painful parts, should be covered with leeches and afterwards with fomentation cloths. Repeat the bleeding and leeching once or oftener according to the symptoms, age and state of the patient. The above is said of the earlier stages of idiopathic enteritis. In the advanced periods, when feebleness of the pulse exists with tympany of the belly and a cold

surface denoting tendency to death by asthenia, support the strength. So also in cases of mechanical impediment, the use of blood-letting must be modified by that circumstance. Of internal medicines the best is calomel and opium combined; the latter prevents the former from purging. The opium allays pain, and perhaps relaxes spasms; mercury tends to arrest the inflammation. This combination often settles an irritable stomach, disposes to diaphoresis and improves the pulse. When the inflammation is greatly abated by bleeding, leeching, fomentation, give *mild* laxatives, as castor oil, to clear the bowels. Purgatives are often rejected with great distress; or, if retained without operating, they do more harm than good. Purgatives, operating during the height of the inflammation, produce watery stools, but do not move the feces. Before giving purgatives by the month, order injections of tepid water, from two to six pints, injected gently and through a tube passed as far as possible up the rectum. These soothe, soften, hardened feces, evacuate the lower canal, and untwist the bowels. It is said enemata of infusion of tobacco or of smoke of tobacco have done good. When the symptoms of sinking come on, a total cessation of pain, failure of the vital powers and coldness of body, they do not necessarily denote gangrene and a hopeless state. Wine and support may save the patient. If diarrhea exist with this state of collapse, join opiates with the wine. External warmth helps much.

MECHANICAL OCCLUSION OF THE BOWELS.—*Symptoms.*—A person, desiring to open his bowels, takes purgative medicines of all kinds; they do not purge, but cause pain, griping, and probably sickness also; the tongue meanwhile may be clean, pulse quiet, skin soft and cool, and abdomen painless and supple. If you are called in and the costiveness is obstinate with signs of inflammation within the abdomen, diligently search for hernia; examine, if necessary, the rectum and vagina for stricture, hardened feces, uterine or other tumors. If nothing be found you are at liberty to purge more actively. You prescribe strong doses of jalap and calomel; black draughts. The stomach being irritable, you give *pills* of cathartic extract, repeated at short intervals; or large doses of calomel, ten grains or a scruple, three or four times in succession. You inject stimulating clysters; or use croton oil; or opiates to relieve spasm; and, if inflammatory symptoms arise, its remedies, especially bleeding, are tried. But all in vain. The medicines are vomited, or, if not, they produce or renew the pain and nausea. Sometimes on the intermission of these active attempts the patient becomes comfortable, suffering occasionally termina and fits of retching.

Treatment.—When there is an immovable obstacle, stop the purgative plan, for it causes useless torture. Crude mercury, given to force a passage by its weight, is seldom or never of any use, even should it reach the obstruction. Besides, it may become oxidized and salivate severely. Dashing cold water over the abdomen and lower extremities may sometimes open the parts below the obstruction, and is therefore of little or no use. Galvanism to the part has succeeded. In a case of intussusception, inflating the bowels with air, cured. Large enemata, as much as the bowels will easily hold, gradually introduced and repeated three or four times daily, sometimes wash away hardened feces. If made of milk or beef-tea and retained for a time, they nourish the patient. They are generally very soothing, allaying termina and sickness; they are adapted to every stage and variety of the complaint. We fear that the bowel is absolutely impassable, when we discover a tumor or hardness in the belly; or when we learn of a former inflammatory attack since which the bowels have been hard to regulate; and when the patient feels the injections reach a certain spot, and the intestines rumble, and roll, and propel their contents

no further than the same spot. A distinctive symptom is when the abdomen gradually enlarges, especially if the food be retained; the intestines fill above the obstacle; then throcs of pain occur during which may be felt and seen immense coils of bowel roll over, like a huge snake, with loud roaring and flatulence. Now purgatives are certainly improper. Sometimes violent inflammation kills in a few days; sometimes the patient lives, with long intervals of ease, for four, five, or six weeks. *Opiates* are eminently adapted to these cases. They procure sleep and ease and enable the patient to die, easier though not sooner. Life may sometimes be saved by making an *artificial anus*. This is feasible *only* when the obstacle is near the end of the large intestines; *i. e.*, in the rectum or lower part of the descending colon, for here only can the obstacle be detected with any certainty, and the peritoneum be avoided from behind. It is proposed to lay open the abdomen and relieve the bowels.

COLIC.—In this, there is pain in the abdomen, costive bowels, and often vomiting; these occur in enteritis also.

DIAGNOSIS OF COLIC AND ENTERITIS.—The pain of colic is wringing generally, and round the navel; that of enteritis is similar during the paroxysms. In enteritis there are fever, and pain increased on pressure; the patient lies on his back, with his trunk motionless and his knees drawn up; respiration is thoracic. In colic, the circulation is tranquil; there is no fever; and the pain is even mitigated by pressure, except occasionally when a portion of gut has become rapidly distended with gas; the patient lies in all positions to obtain relief. In colic, there are paroxysms of pain, and perfect intermissions; in enteritis, there are paroxysms, but no perfect intermission, there being a duller abiding pain between the paroxysms. In colic, the patient does not wear an anxious aspect, as in enteritis. The pain of colic arises, probably, from distension by gas, or from spasm, or both, for there is often audible flatulence and the abdominal muscles are hard and contracted. In enteritis, the paroxysmal pain depended, likely, on peristaltic action or temporary distension of the inflamed parts. If a case of colic be mistaken for enteritis the error is on the safe side. Colic, if neglected or badly treated, may result in inflammation. In fact, an obstacle in the bowels may first cause colic and then inflammation. Colic sometimes arises without any detectible mechanical obstruction.

COLICA PICTONUM—PAINTER'S COLIC.—The cause of this is lead in the system.

Symptoms.—Its ordinary symptoms are those of colic. Generally the first attacks are recovered from. Even in the primary attacks there are usually pain in the head and limbs; sometimes cramp, sometimes even epilepsy and coma. After one or several attacks the extensor muscles of the hands and fingers are palsied; the wrists *drop*; the palsy is local, not centric; the muscles waste, as is seen especially in the ball of the thumb. Recovery from this state is often possible. But if the cause continue, the patient becomes a cripple, cachectic, loses the power of sleeping, and sinks finally under some visceral disease. Sometimes the palsy precedes the colic. Colic pictonum is seldom fatal as colic. No appearances, after death, have been found in the bowels to explain the pain or constipation. The pain is thought to be neuralgic. A symptom, believed to be pathognomonic, and which is an *early* effect of lead in the system, is a blue or purplish line running along the edges of the gums, just where they meet the teeth. This line is sometimes produced by lead given as a medicine; it remains distinct after death. The presence of this line informs the physician or workman that lead is affecting the system.

Treatment.—In colic, especially lead colic, get the bowels to act. If the

pain of the belly be increased on pressure, if the pulse be at all accelerated, if the face be flushed and there be the slightest approach to fever, it can scarcely ever be wrong to put leeches on the belly, or even to bleed from the arm. This tends to curb the inflammation, if any, and remove spasm. When inflammation is not suspected, apply external warmth; diligent friction with some stimulating liniment; or, better, a mustard poultice or a turpentine stupe. Relief has followed the hot bath and the injecting, at the same time, of a portion of the water. It will generally be expedient to give a full dose of calomel and opium; calomel, grs. x, opium, grs. ii. The opiate sometimes opens the bowels. Usually the calomel and opium soothe the vomiting, restlessness, and pain; and then a full dose of neutral salts, or of castor oil, or of castor oil with a drop or two of croton oil, if required, will open the bowels. It is sometimes necessary to repeat this alternation of purgatives and anodynes; but when the bowels are once freely moved, the disease is generally very tractable. Alum, ℥ i to ℥ i, every three or four hours, dissolved in some bland liquid, is said to cure vomiting, flatulency, pain, and open the bowels more surely than any other drug. It has been recommended to medicate the hot bath by using $\frac{3}{4}$ ii of the sulphuret of potassium to the fifteen gallons of water, in a wooden vessel. The blackness which forms on different parts of the body can be removed by a brush. When the colic is subdued, full doses of iodide of potassium should be given to eradicate the lurking poison. The *palsy* in the early stages and primary attacks is often curable. Electricity to the part, first by spark, then by slight shocks, is thought useful. Support the hand and fingers by splints the greater part of the day. The electro-magnetic apparatus may do good. One attack is apt to be followed by others.

Prevention.—To prevent this disease the painter should keep the lead out of the body by *cleanliness* of the whole body, washing often, rinsing the mouth, combing the hair often, by wearing working clothes made not of wool, but of compact linen, and washed often and worn as little as possible out of the shop, and by wearing a light impervious cap at work. The hands and mouth should be washed before meals, which should be eaten out of the shop. Breathing the poison might be prevented by Mr. Jeffrey's orinaseal respirator, for instance. The free use of fat and of oily substances as food is thought prophylactic; also *sulphuric acid lemonade*, a solution of sugar rendered acid by sulphuric acid. If this be so, the lemonade converts any other salt of lead into an *insoluble* sulphate.

LECTURE LXXII.

DIARRHEA.—This consists in frequent loose or liquid alvine evacuations, and is a common symptom in different diseases. It may proceed from over-repletion of the stomach, or from the use of unwholesome food—*diarrhea crapulosa*. This is a salutary effort of nature at getting rid of irritating matters.

Symptoms.—These are often nausea, flatulency, griping pains in the bowels, succeeded by fluid stools of unnatural appearance and odor; often also a furred tongue and foul breath; but little or no fever, a natural pulse and heat of body.

Causes.—These are excess in the *quantity* or *mixture* of the articles of food and drink; *raw vegetables* of many kinds, cucumbers, &c., sundry kinds of fruits, especially if unripe; mushrooms, even when cooked; *putrid* or *high* food; *fish* often, shellfish, &c.; in children, other food

than the mother's milk. Even wholesome food, taken for the first time, may cause griping and purging. Another cause is certain *mental emotions*, especially the depressing passions, grief, above all, fear. *Seasons*, the hot weather of summer and autumn, and the atmosphere of the dissecting-room, are predisposing causes.

Treatment of Diarrhea Crapulosa.—This diarrhea generally ceases of itself. Favor recovery by giving diluent drinks, and forbidding food not easy of digestion. Cleaning the bowels by some safe purgative, and then soothing them by an opiate, often accelerates recovery. Or, give the aperient and anodyne together; they will not interfere with each other; as castor oil, $\frac{3}{4}$ ss, with laudanum, ℥ vi or viii; or pulvis rhei, grs. xv to \mathfrak{D} i, with half as much *pulvis cretæ compositus cum opio*. If the diarrhea runs on and is slight, astringents and bitter medicines may suffice; infusion of cusparia, with the tincture of cinnamon. If it be more severe or obstinate, use a chalk mixture, which is antacid, combined with catechu or rhatany, which is astringent, and with laudanum, which soothes. In extreme cases, give a pill of sulphate of copper, gr. $\frac{1}{4}$, with opium, gr. $\frac{1}{4}$, three or four times daily. The opium keeps the copper from griping. Tannin in three or four grain doses every four or six hours, often arrests chronic diarrhea; it is very useful where opium is not well borne.

SPORADIC CHOLERA.—*Symptoms.*—*Causes.*—The symptoms of this are vomiting and purging of liquid matter deeply tinged with, and principally composed of, bile; violent pains in the stomach and bowels; cramps of the legs and abdominal muscles; great depression of the vital powers, coldness and faintness; a tendency to syncope or collapse; sometimes actual syncope. The attack is generally sudden. There is a burning sensation in the epigastrium. Sometimes death results. The chief cause of cholera is cold after long and great heat. The irritation of the bowels and stomach proceeds from an undue quantity of unusually acrid bile in the intestines. The causes of diarrhea, especially imprudence in eating and drinking, may often determine an attack of cholera.

Treatment of Sporadic Cholera.—Strong drastic aperients to stop the purging and vomiting, and narcotics or astringents to lock the bowels, are equally hurtful. Dilute the contents of the bowels and thus favor their expulsion by emollient drinks and injections, especially by chicken broth; for faintness or sign of sinking give *laudanum* in full doses. If the vomiting and diarrhea have lasted some hours before the patient is seen, give the opiate immediately. For very irritable stomachs, solid opium in pill form is better than laudanum; or an opiate clyster answers well; or an opiate suppository may be introduced into the rectum. When the skin is cold and the pulse sinking or irregular, carbonate of ammonia or brandy and water may be given by the mouth; and a mustard poultice, or a bag of hot salt, or a moist and hot flannel sprinkled with oil of turpentine, should be applied to the abdomen. Cramps are relieved by diligent friction with the hand, or some stimulating liniment. In great collapse, any attempt to rise from the horizontal posture may cause fatal syncope. Opium, our sheet-anchor, sustains the flagging powers and quiets gastrointestinal irritation. After a severe attack there is apt to be extreme feebleness, with soreness of the muscles of the trunk and limbs; and sometimes symptoms of inflammation of the mucous membrane supervene; pain and tenderness of the belly, a white tongue, thirst and fever. These may require the remedies of inflammation.

EPIDEMIC, ASIATIC CHOLERA.—*Symptoms.*—This, like the *sporadic*, is attended by profuse vomiting and purging, by extreme prostration of strength, and by cramps. But the ejected matter contains no *bile*, and the symptoms of collapse come on early. The discharged matter is thin,

for the most part whitish, like rice-water, without fecal smell, and contains small white albuminous flakes. The evacuations sometimes vary. The symptoms of collapse are a frequent, *very* small and feeble pulse, sometimes extinct at the wrists, even for hours; a cold and often blue surface; purple lips; blue finger-nails; and a leaden-colored and cold tongue; cold breath; shrinking of the body; sunken eyes; cheeks fallen; a withered and ghastly countenance; white, shrivelled hands and fingers, skin bathed in cold sweat; husky and faint voice; hurried and anxious breathing. The muscular cramps of the lower extremities and abdomen are attended with severe pain, and constitute the most of the suffering. No urine is passed or secreted during these symptoms. Even in extreme collapse the intellect is clear to the end. Death may occur in two or three hours, or not for twelve or fifteen. The course of the symptoms varies much; sometimes the vomiting and purging soon cease; sometimes they do not exist, but rapid collapse and sinking. These are thought the most formidable cases. Sometimes the peculiar secretion is *poured forth*, but not *ejected from the body*. Sometimes the cramps are not very troublesome. The cutaneous blueness may be absent. Generally there is tormenting thirst. The venous blood is dark, thick, and scarcely moving, if moving at all.

Anatomical Characters, History, Causes, &c.—Post-mortem examinations have generally found in the alimentary canal such matter as had previously issued from the bowels; also usually the glands, solitary and agminated, large; the veins loaded with a thick, black, tar-like blood; and the urinary bladder empty and of the size of a walnut. The blue color often disappeared quickly after death. A quarter or a half hour or longer after death, slight twitching and quivering of the muscles or movements of the limbs have taken place, owing to the spasms. The above is an outline of the cholera of 1831. The poison of that cholera travelled, was portable, and communicable from person to person. The malady was excited by some positive poison applied to the body; but whether this poison multiplied and reproduced itself in the body is more doubtful. A great majority of the cases was caused by the poison in the atmosphere. The nature of the poison might be explained by "the hypothesis of insect life as a cause of disease." The predisposing causes of cholera were causes of debility; as scanty nourishment, bad air and the other evils of poverty, but especially *intemperance*; and, more particularly, the intemperate and habitual use of distilled spirits.

Modes of Attack.—The cholera attacked in two ways: suddenly and without warning, which was rare; or more often, the specific symptoms were preceded, for a time, even for some days, by diarrhea.

Treatment of Epidemic Cholera.—When once fairly formed, medicine had very little power over the cholera of 1831; but in the preliminary stage of diarrhea, it was easily managed. Neglected diarrhea often ran into uncontrollable cholera; and the use of purgatives hastened or insured that catastrophe. The proper plan was to arrest the diarrhea, especially when painless, copious and exhausting, as soon as possible, by astringents, aromatics, and opiates. Sulphuric acid has been highly praised. Scripse doses of *pulvis crete compositus cum opio* answers well. In collapse we have no reliable drug. The patient might, perhaps, be allowed to drink as much cold water as he desired. In the severe pains from cramps, ease might be obtained by the cautious use of chloroform; to these measures, full and repeated doses of calomel might be added. For the fever which sometimes succeeds collapse, and which occasionally occurs without it, no particular direction can be given. Pay special attention to the kidneys and their functions. The thick blood which congests them is loaded and poisoned with urea, thus endangering their structure and that of other

organs. The remedies are bland diluent drinks, the warm hip-bath, and, perhaps, the removal of a few ounces of blood from the loins by cupping. Some physicians relied on timely bleeding; some, on mustard emetics; some, on hot-air baths to meet the apprehended attack; some on introducing into the system a large quantity of neutral salts to liquefy and red- den the blood and restore the circulation; some, on diluting the blood by pouring warm water, or salt and water, into the veins; some, on brandy; some, on opium; some on cajuput oil; some, on calomel alone. Each of these, in some cases, did or *seemed* to do good; but doubtless some of them sometimes did harm. Some recovered under large and repeated doses of calomel, as 3 ss; yet it cannot be affirmed that the calomel cured them. The injection of warm water into the veins sometimes restored for a time, sometimes perfectly cured, patients who were all but dead and in an extreme state of collapse.

Terminations.—Some got well rapidly; some fell into a state of continued fever, which often proved fatal; some, after the vomiting and purging and cramps had disappeared, died comatose, *over-drugged* perhaps sometimes by opium. The injection of water into the veins *might*, and likely *did* sometimes, cause death by admitting *air* into or by causing inflammation of the veins, or over-repletion of the vessels.

LECTURE LXXIII.

DYSENTERY.—The symptoms of this are griping pains in the abdomen, followed by frequent mucous or bloody stools; straining and tenesmus; a discharge, sometimes in chronic cases, of pus; in the acute form or stage, fever. In diarrhea, the stools are fecal; in dysentery, the feces are retained, or expelled occasionally in small, hard, separate lumps, termed *scybalæ*. In diarrhea, straining, tenesmus and the excretion of mucus, often tinged with blood, are no necessary features; in dysentery, they are. Dysentery sometimes *commences* with the symptoms of diarrhea. Slight and simple dysentery may run its course with little or no fever. When acute and severe, there is more or less pyrexia—this may end in recovery, or early death, or chronic dysentery, which, usually, is finally fatal. The pyrexia sometimes precedes, but oftener succeeds, the local symptoms. Occasionally the fever runs high, the pulse is hard and frequent, the skin hot, the face flushed, the tongue furred; there are headache and thirst. But the pulse soon becomes small and weak, the strength rapidly declines, and the heat of the body sinks. In acute cases, the pain is often severe, but subject to remissions and exacerbations. It occupies the hypogastrium or a part of the course of the colon, which is usually more or less tender on pressure. The patient often irresistibly strains to expel what seems to be excrement ready to be dislodged; but in vain. The little that is voided is either a jelly-like mucus, (*dysentæria alba*; *morbus mucosus*,) or, oftener, it is mucous and bloody, (*bloody flux*,) mixed with films, shreds, and morsels like flesh. Often the ejected mucus is green, or black, or reddish, like the washings of meat, and horribly fetid. Sometimes the bladder sympathizes and there is *dysuria*; or the stomach sympathizes, and nausea and vomiting ensue. With all this, the febrile distress continues; the patient passes sleepless, or dreamy and disturbed nights, is low-spirited. In fatal cases, the pulse becomes very small and rapid, the features sharpen, and the surface grows cold. Death begins at the heart.

Pathology.—Dysentery consists in inflammation of the lining of the large

intestines, yet not of the whole indiscriminately. In simple dysentery, marked by tormina and tenesmus and frequent dejection of bloody mucus, without feces, the *rectum* and *descending colon* are chiefly inflamed. When the earlier parts of the colon are affected, the stools at the outset are often composed chiefly of unnaturally fluid excrement, mingled with blood and slime. This is *dysenteric diarrhea*.

Causes.—Dysentery is a pest of hot climates, of fleets, and armies. The ascribed causes are exposure to wet and cold; bad food; malaria; contagion. In temperate climates, dysentery is autumnal; in hot, it is more common and severer when rains succeed protracted drought. Malaria may cause dysentery by giving rise to ague and congestion of the splenic and inferior mesenteric veins which carry the blood from the rectum and descending colon. So also may dysentery result from *hepatic* congestion and disease. That dysentery is *contagious* is not evident.

Anatomical characters.—In the dead body more or less ulceration and enlargement of the glands, chiefly of the large intestines, are found.

Treatment.—Dysentery is tractable when treated early, and when its cause is avoidable. The camp dysentery in the Peninsula had two stages—the inflammatory and that of ulceration. The treatment in the first attacks was this: First, free bleeding. Immediately after, Dover's powder, grs. xii, were given; this dose was repeated thrice, at intervals of one hour. Plenty of warm barley-water was at the same time given, and profuse sweating encouraged for six or eight hours. A pill of calomel, grs. iii, and opium, gr. i, was given every second night; and in the following days, Epsom salts, ʒ ii, dissolved in a quart of light broth. The venesection was repeated while the strength and pulse permitted, till the stools were free, or nearly free, from blood; and Dover's powder as a sudorific was always given after the bleeding. The warm bath relieved the great pains, attended with much tenesmus. This plan was pursued for a few days, and gradually caused the inflammatory diathesis to yield. If the disease entered the second stage, and became chronic, laxatives and opiates, alternately, appeared best, and combined with such medicines as promote perspiration. Swathe the abdomen with flannel, or cover it with a warm adhesive plaster. Clysters, if not prohibited by the tenesmus, are beneficial; warm starch, ʒ ii, with laudanum. Or if the pain and tenesmus, or irritable bowel, prohibit the clyster, a grain or two of solid opium, inserted into the rectum beyond the sphincter, often allay distress. The food should be farinaceous and simple. During convalescence, improper diet and exposure to cold should be avoided. Mercury should not be indiscriminately used; it is powerful for good and evil. It was, according to Sir J. McGrigor, highly useful when there was also disease or disorder of the liver; dull pain in the hepatic region and right shoulder; a yellowish-brown color of skin and conjunctiva, and uneasiness in any other posture than on the right side. Sir J. McGrigor says: "In the early state of the acute and unmixed disease, and before bleeding, mercury aggravates the symptoms; in the more advanced stage, particularly with hectic fever and extensive ulceration, it invariably hurries to a fatal end."

Sporadic dysentery seldom requires the lancet. Apply leeches in the track of the colon, when there is much tenderness on pressure. Give then a full dose of castor oil, and then an opiate; alternate the laxatives and opium; this is better than giving them together. Opiate enemata relieve tenesmus. The warm bath, hot fomentations to the abdomen, means to promote the cutaneous secretions, help recovery. In engorgement of the portal system, complete relief often follows the exhibition of calomel, grs. v, at bed-time, and of a senna draught the next morning, for two or three successive days. Should the symptoms still drag on, it may be necessary

to gradually introduce mercury to touch the gums; equal parts of *hydrargyrum cum cretâ* and of Dover's powder combined, in pill or powder.

DIARRHEA ADIPOSA.—This is a discharge of a quantity, sometimes *large*, of oil or liquid fat, which floats on water, is inflammable, and, when cool, of the consistence of butter. This is not a *common* or necessarily *fatal* complaint. A patient may live in good health for many years after it. Still it is often found associated with incurable malignant disease in the duodenum and head of the pancreas. The passage of a similar oily fluid through the *urethra* has been found associated with organic malignant disease of the *kidneys*. Cures have followed the swallowing of sweet oil, O $\frac{1}{4}$ to i.

INTESTINAL CONCRETIONS.—These occur in the human entrails, chiefly in the cæcum and large intestines, but sometimes in the stomach. One or two, or many, and sometimes very large ones, exist. They may be formed of saline particles mixed with animal, or of the beard of oats, or magnesia; or indigestible substances, concentered around a gall stone, stones of fruit, &c. These concretions may exist for a long time without causing any definite symptom. But at length, by their pressure and distension, by the ulceration which they sometimes cause, and, above all, by obstructing the intestines, they produce symptoms. When near the outlet, they may be dislodged by mechanical means; when beyond the reach of the finger or of instruments, they may be broken down by frequent injections of warm water, or soap and water. Opium may relax spasm. They generally kill by exciting inflammation.

WORMS.—Parasites are found in the heart, arteries, kidney, muscular, or areolar tissue, &c. Those occupying the interior of the body are called *entozoa*; those dwelling externally, *ectozaa*, or *epizoa*.

Species.—There are five sorts of worms common to the intestines.

1. *Ascaris lumbricoides*, or round worm. This is like the common earth-worm, in shape, size and appearance; it is from five to twelve inches long, reddish brown, with a yellow tinge. Young ones are found an inch and a half long. The earth-worm is redder than the intestinal worm, and less pointed at its ends. The mouth of the former is a short slit on the under surface of the head; in the latter it is triangular, surrounded by three tubercles, and terminal. In the former the anus is terminal; in the latter it is a transverse slit *near* the extremity, and on the under surface. The former has projections, like bristles or feet; the latter has not. Their *habitat* is the small intestines; they may pass into the stomach, or large bowels, whence they generally are soon voided. They have *crept* into the œsophagus and nostrils. They do not perforate the intestines. There may be only one, or two, or many at one time. They are more common in early life than afterwards.

2. *Ascaris vermicularis*; or *oxyuris vermicularis*; or simply *ascarides*; or *thread-worm*. These resemble slender maggots, or bits of white thread. They are from two to six lines long. They live principally in the rectum, sometimes in thousands; they are ejected, or sometimes creep about neighboring parts, the vagina, or urethra, thus causing intolerable itching and distress. They belong chiefly to infancy and children; but sometimes infest adults.

3. *Tricocephalus dispar*; or *long thread-worm*. This is from one inch and a half to two inches long. The extremity with the head is very fine and small. Its *habitat* is the large bowel, especially the cæcum. It sometimes exists in great numbers, and is said to be very common.

4 and 5. Two species of *tenia*; long, flat, articulated worms, like pieces of tape. *Tenia solium*, or common tape-worm; and *tenia lata*, or broad tape-worm. The former, towards its anterior extremity, is one-third or one-quarter of a line broad. Its broadest part is three to six lines wide.

It is believed that no lost joints are reproduced. The animal is hermaphrodite. It is sometimes over twenty feet long. Its movements are felt by the patients within them. It has protruded many feet from, and again withdrawn into, the anus. It is most frequent in adults; but has been found in the fœtus. It is not always found alone, as regards its own or other species. Its *habitat* is the small intestines; it sometimes extends into the large, or into the stomach. The head of the *tænia lata* differs from that of the *tænia solium* (as seen through a microscope;) its joints are shorter and broader and differently united; the pores are not on the edges, but in the centre of the flat surface; and it is not so easily broken across as the *tænia solium*. Its average length is fifteen feet.

In England, Holland and Germany, the *tænia solium* is common; in Russia, Poland and Switzerland, the *tænia lata*; in France, both.

LECTURE LXXIV.

ENTOZOA—Continued.—*Hydatids, Acephalocysts*, animals like bags of water, containing a thin colorless liquid and having only one aperture, often occur in various parts of the body, especially in the liver. They usually occur unattached, and sometimes in vast numbers, within a large cyst or cavity, and may destroy life by their bulk and pressure, according to the part occupied. Their presence can seldom be divined; or if so, they can seldom be cured. A galvanic current or electric shock, passed through the part affected, or poisonous drugs, as mercury or iodine, are impotent to cure. They sometimes work their way to the surface, and escape through an ulcerated outlet. *Cysticerci* are single cyst-like bodies with short retractile necks. The *cysticercus cellulosus* inhabits, but rarely, the interfascicular areolar tissue of the muscles, and the eye. *Trichina spiralis* is a microscopic worm, and, sometimes in myriads, infests the voluntary muscles. It gives rise to no symptoms, and is not connected with any age, sex, or particular form of disease.

FILARIA MEDINENSIS—DRACUNCULUS, OR GUINEA-WORM.—*Symptoms.*—This is a long, slender, round, uniform animal, like a fiddle-string, from five inches to twelve feet long, occurring in the subcutaneous areolar tissue of almost every part, but especially of the lower limbs. It is sometimes solitary; it is epidemic sometimes in intertropical regions. Sometimes there are no symptoms for a long while; at length occur itching of the part, a sensation of something creeping under the skin, sometimes a cord-like ridge in the track of the worm; finally a vesicle, or pustule, or little boil forms, from which, when broken, the animal's head protrudes; there is fever, often; sometimes much local suffering; sloughing of the areolar tissue; and sometimes dangerous hemorrhage.

Treatment of the Guinea-Worm.—Extract the worm gradually and carefully, by winding the protruding part round a small stick, or roll of adhesive plaster, day by day; protect the roll by a bandage. When the worm is broken, violent local inflammation, abscesses and sinuses and high irritative fever are said to ensue—owing likely to the presence of dead animal matter, or of young filariæ. When superficial, the natives of Guinea, &c., make an incision in the skin about the middle, and pull the worm through from both ends; then the part soon heals. No other medication does good, except, perhaps, assafœtida as a preventative. Oiling the uncovered parts of the body might be a preventative. Cleanliness also is considerable protection. The filariæ peculiar to the eye, or to the bronchial glands, are very rare.

STRONGULUS GIGAS.—This sometimes occupies the kidney; it is from five inches to one yard long, and sometimes half an inch in diameter. It gives rise to no distinctive symptoms, but causes hematuria, retention of urine, and great suffering when passing out of the body through the urinary channels, or by abscess and ulceration through the back. *Hydatids*, though containing animalcules, are probably not monstrous nucleated cells, rendered so by some erring vital action.

The hypothesis of *equivocal* or *spontaneous* generation is not tenable. The animals found in the open passages come from without; the germs of entozoa, found in shut cavities or solid parts, are probably carried thither by the blood. The entozoa prevail most in the weak and unhealthy, especially in scrofulous children; yet they are not uncommon in robust persons. Intestinal worms are more abundant in low and moist places than elsewhere; also where there is much debility of the digestive organs; in the leucophlegmatic; in persons who secrete habitually much mucus; in the negro children of the West Indies.

Symptoms of Worms in general.—The symptoms of worms in the alimentary canal are very multifarious, and, generally, very equivocal; there is none pathognomonic. The most common are: colicky pains and swelling of the belly; picking of the nose, from irritation and itching there; itching of the fundament; foul breath; grinding of the teeth during sleep; a capricious appetite, sometimes voracious and insatiable, sometimes none at all; irregular bowels—and sometimes *nervous* symptoms, as chronic cough, epilepsy, partial palsy, amaurosis, aphonia, &c.

Symptoms of the Ascaris Lumbricoides.—The most characteristic symptoms are: a tumid belly, emaciated extremities, offensive breath, deranged appetite, colicky pains; and, when the animals get into the stomach or œsophagus, they may cause pain, nausea, vomiting, even convulsions. They may cause death by crawling into the biliary ducts, or rima glottidis.

Treatment of the Ascaris Lumbricoides.—Purge briskly, and give bitter medicines in the intervals; purge occasionally by calomel and jalap, and give thrice daily some preparation of iron; the sulphate, or muriated tincture. Likely most of the patent worm-medicines consist of mercury, jalap and scammony in strong doses. The fetid drugs, assafoetida, galbanum, valerian are often used. Cowhage, *dolichos pruriens*, and tin-filings have been advised. Oil of turpentine is more potent against the tapeworm. Croton oil by the mouth, or rubbed on the abdomen, has been commended. Common salt, colored by cochineal and given every morning in 3 ss doses, has been found very successful.

Symptoms of the Ascaris Vermicularis.—These are itching and irritation about the anus, especially in the evening and at night, and aggravated by whatever overheats the body, as the warmth of the bed. When, instead of disappearing with childhood, as is usual, they last through life, they are a great annoyance, but do not shorten existence.

Treatment of the Ascaris Vermicularis.—Enema are preferable to medicines given by the mouth. *Bitters* destroy these worms: as an injection of the infusion of quassia. An enema of the muriated tincture of iron $\frac{3}{4}$ ss, with water O ss, is good; or one of lime-water. Tobacco clysters are hazardous. In troublesome cases, Martinet recommends three successive injections; the first simply purgative; the second specific, (common salt in solution, cold vinegar and water, lime-water, some bitter infusion;) the third, oleaginous and soothing. Oil often allays itching; so, sometimes, does a towel, wetted with cold water and applied to the anus, in bed. Improve the general health. There is no particular symptom of, or remedy for, the *tricocephalus dispar*.

Symptoms of the Tape-Worm.—The most distinctive symptoms of tape-

worm are: uneasiness in the epigastrium, often abated or removed by eating; an appetite generally craving, but sometimes bad; itching of the nose and anus; nausea; colic; giddiness; a sour breath; sometimes loud borborygmi; sometimes convulsions. Dilatation of the pupil is not a symptom. If pains in the limbs, lassitude, and nervous symptoms, exist with the above symptom, the diagnosis of some kind of worm in the intestines is strengthened.

Treatment of the Tape-Worm.—Large doses of oil of turpentine, $\frac{3}{4}$ ss to ii. Castor-oil may be given with it; or after it to assist purgation. The turpentine should be taken in the morning, fasting; no drink should be taken till it begins to operate, lest sickness and vomiting should result. Generally the worm is voided, dead, in an hour or two. Objections to turpentine are its nasty taste, the sort of intoxication, the sickness, and the strangury it sometimes causes. This effect is less common from large than from small doses. Keep the bowels open with castor-oil, till the violet smell produced by the turpentine leaves the urine. Bremser found Chabert's empyreumatic oil a powerful and permanent cure. The dose is two teaspoonfuls, night and morning, till four or six ounces have been taken, a purgative being occasionally interposed. If confusion of the head result, diminish that dose. This oil contains turpentine, and is more nauseous than it. Some doubt its perfect safety. The bark of the pomegranate root is a great remedy. Mr. Breton gave $\frac{3}{4}$ ii of the decoction (of the fresh bark $\frac{3}{4}$ ii in water O iss, boiled to O $\frac{1}{2}$) cold, repeated every half hour, for four times. To two children of seven and ten years he gave $\frac{3}{4}$ i of half the previous strength, every half hour for six or more times, beginning early in the morning; in the middle of the day he gave $\frac{3}{4}$ ss doses; or \mathcal{O} i of the powder, in water, he gave every hour for five hours. Dried bark is stronger than fresh. One single dose of $\frac{3}{4}$ viii or x of Mr. Darbon's potion, (the ingredients of which are unknown,) given before breakfast, has cured. This is not strongly cathartic, and sometimes requires the aid of a lavement. Kouso appears more successful than turpentine and less unpleasant. Occasionally it nauseates; sometimes it is aperient; sometimes it requires a subsequent purgative; it is safe and speedy. The dose is $\frac{3}{4}$ ss. The powdered flowers are steeped in half a pint of lukewarm water for a quarter of an hour, and then the whole is swallowed. Lemonade is recommended to be drunk before and after, but why, does not appear. It is well to use it in the morning, an aperient having been taken the day before. Madame Nonfer's nostrum, the base of which is the root of the male fern, is a valuable remedy. Dr. Gull gives 3 iss to 3 ii of the ethereal tincture. It caused some nausea, occasionally vomiting, and then purged. The oil of turpentine is sufficient in most cases. Next to it in efficacy comes the bark of the pomegranate root.

LECTURE LXXV.

HEPATITIS.—This is inflammation of the liver, and may be *acute* or *chronic*. Both are more common in warm climates than elsewhere.

Symptoms.—Of well-marked acute hepatitis, the symptoms are: fever with pain and a sense of tension in the right hypochondrium; inability to lie on the left side; difficulty of breathing; dry cough; vomiting; hiccough. These symptoms may not all be present in every case. Sometimes the pain is sharp and pricking, sometimes dull and tensive; when the former, the peritoneal covering, when the latter, the parenchyma of the gland, is sup-

posed to be affected. Sometimes the pain extends to the right clavicle and shoulder, owing, probably, to the convex surface of the liver being inflamed. Occasionally the *left* shoulder is painful, the left lobe of the liver being also affected. The dyspnea and short dry cough are owing to the pain in the right side being often increased by the movements of the diaphragm in respiration. With some exceptions, decubitus on the left side is painful, for then the weight of the organ stretches the inflamed parts. The nausea, vomiting, and hiccough result from the pyloric extremity of the stomach sympathizing with the liver, on whose under part it lies. The thoracic or stomach symptoms may be expected to predominate, according as the convex or concave surface of the liver is chiefly inflamed. Permanent rigidity of the abdominal muscles, particularly of the right rectus, is a strong symptom, according to some, of deep-seated abscess of the liver. Sharp pain in the right side, with feverishness, is oftener pleuritic than hepatic; here auscultation and percussion will help the diagnosis. *Jaundice* is an *occasional*, but not at all *necessary*, effect or accompaniment of hepatitis, acute or chronic.

Terminations.—Acute hepatitis may terminate in resolution, or diffused suppuration; or, more usually, in an abscess or abscesses. Sometimes the liver adheres to the parietes of the abdomen, and the abscess points *externally* and may be opened. Sometimes it adheres to the stomach or intestines, and the abscess breaks into the alimentary tube, and discharges from the mouth or anus. Sometimes it adheres to the diaphragm and discharges into the pleura, presently causing suffocation; or into the lungs, which also adheres to the diaphragm, and then through the bronchi and mouth.

Rigors, in hepatitis, denote that suppuration is likely going on; if the pain is thenceforward mitigated, or changed into a sense of weight, and hectic fever sets in, it is tolerably certain that pus has formed. The most desirable road for the exit of the pus is through the biliary ducts and duodenum; the next best, and the most common, is through the parietes of the abdomen; the next, through the alimentary canal; that through the air-passages is fearfully perilous; its entrance into the shut serous sacs, pleura, pericardium, &c., or great blood-vessels, vena cava, &c., is almost necessarily fatal. When the abscess points externally, and the parts above it are very thin and verging to a point, the lancet may be used; but then only when there is a certainty that there is adhesion to the parietes of the abdomen, and only when distress or danger demands it; otherwise leave the abscess to itself. Without such adhesion the pus will be transferred to the peritoneal sac, causing, very likely, fatal peritonitis; or, if the abscess be not reached by the scalpel, that cavity will be laid open. An abscess in the liver is always gravely hazardous, yet often recovered from.

Causes.—Acute hepatitis is apt to arise from exposure to cold, or from mechanical injury. Suppurative phlebitis may cause hepatic abscesses. In hot climates, hepatic suppuration and *dysentery* are often found coincident; the hepatic disease causing congestion of the lining of the intestines, and a disposition of it to inflame; or, more probably, the inflamed membrane sends with the blood, if not pus, yet some vitiating ingredient, which provokes inflammation in the capillaries of the liver. Suppurative inflammation of the liver is apt to supervene on injuries, surgical and others, of the rectum, especially on some forms of ulceration of the intestines, of the stomach, of the gall-bladder or its ducts.

Treatment of Acute Hepatitis.—At the outset treat vigorously to prevent suppuration. Blood should be freely taken by venesection, and by leeches applied near the part. Deplete the portal system by purgatives, especially those producing copious and watery stools, as the neutral salts, much di-

luted, and quickened, if necessary, by adding the infusion of senna. After blood-letting and the subsidence of the inflammation, apply blisters to the right hypochondrium,—repeated blistering is better than a single blister kept open by savine ointment. At the *very first*, in hot climates, mercury is considered inadmissible as being stimulating to the liver; but after the inflammation has abated, give it, to affect the system as soon as possible in acute cases, but slowly in chronic. When suppuration is unavoidable, or has taken place, as shown by the cessation of pain, by the sense of weight, by hectic, deplete no longer, but sustain the strength by nourishing diet and tonics, as quina sulphas, with sulphuric acid, or by nitro-muriatic acid.

CHRONIC HEPATITIS.—This may be a sequel of the acute; or it may arise under the same circumstances as the acute; or it may often be produced by specific disease in the liver, by carcinoma, or serofulous tubercles. The external signs, when they exist, of melanosis and hydatids in the liver, are much like those of chronic hepatitis.

Symptoms.—The symptoms of chronic hepatitis are: some fulness and weight in the right side; some shooting pains, at times, there; some uneasiness or pain on pressure; decubitus on the left side uncomfortable; perhaps some jaundice; sometimes some fever. In chronic liver diseases generally, there are apt to be much languor, lassitude, depressed spirits, and dread of impending evil. There is a sallow complexion, and sometimes emaciation. The liver sometimes *increases*, as in the case of the “fatty” liver, &c.; sometimes diminishes in size, as in the “hob-nail” liver, or *cirrrose*. These conditions may be detected often by palpation, percussion, and sometimes by inspection. A large round boss, projecting from the surface of the liver, is likely a collection of hydatids, especially if it arose without pain, fever, or any injury to health. Several smaller tumors, rendering the surface uneven, with injury to the health, are probably cancerous. A smooth globular, painless tumor, perceptible with the finger, near the margin of the liver, points to a distended gall-bladder, especially if jaundice occur. We are quite helpless to cure the fatty, or hob-nail liver, or that filled with specific deposit. The waxy liver is benefited by regular diet and habits, the muriate of ammonia, iodide of potassium, and minute doses of mercury.

Causes.—These may be the same as in the acute form, but less intense; also intemperance, especially in the use of alcoholic liquors; and particularly in warm climates.

The “*gin-drinker's*” liver, on section, looks like the section of a nutmeg, owing to congestion; it is produced by other causes than intemperance, *i. e.*, by heart disease.

Treatment of Chronic Hepatitis.—Blood-letting is not often necessary, unless violent inflammatory symptoms supervene. Topical bleeding and blistering are useful. The two main remedies are mercury and the saline purgatives, in small doses, and repeated for a long time; as blue pill grs. v every night, or every night and morning, and enough sulphate of magnesia to produce one or two watery stools every day, for weeks perhaps. Send the patient to mineral springs; advise moderate exercise in the open air on horseback and on foot. Tepid bathing is beneficial. Often, Scott's nitro-muriatic bath does good. In certain kinds of hepatic disease, especially in enlargement of the viscus, *iodine* is thought good; as the iodide of potassium, or a mixture of it and iodine, or iodine and mercury combined; or rub night and morning on the hypochondrium the *ung. iodinii comp.*, or *ung. hydrarg. iodidi* does good. The Germans give the *muriate of ammonia* in small and frequent doses.

JAUNDICE, ICTERUS, MORBUS, REGIUS.—This is an occasional symptom

of hepatitis, acute or chronic; but it is generally considered a distinct disease. In the former case, as it depends on various morbid conditions, the diagnosis is often very obscure; in the latter case it is easy.

Symptoms.—The features of jaundice, either as a *disease*, or a *sign* of disease, are, yellowness of the skin and eyes, whitish feces, and a saffron-colored urine, which tinges white linen yellow. The yellow hue is owing to the presence of bile, or of its coloring matter, in the blood and urine. The paleness of the feces, which, however, is not constant, is owing to the want of bile in the excrement. Sulphuric acid turns the urine first dark green and then purple. Generally, in jaundice, there is a costiveness of the bowels, owing to the absence of bile, their natural stimulant. Sometimes, when the jaundice depends on hepatic disease connected with disease of the lining of the intestines, there is constant diarrhea. With the yellowness there is sometimes itching, so great as to require opiates to allay it. Generally, however, there is no itching. In deep vessels, the bile, and sometimes the urine, seem *black*; but in shallow vessels, or when diluted with water, they are yellow. Sometimes the sweat is bilious; sometimes the saliva is yellow and bitter. Some patients *see* yellow; then large vessels may be seen, perhaps, running towards the cornea. The shade of the yellowness depends on the complexion of the patient. There may be green or black jaundice, from the presence of vitiated and dark bile; these cases, and those in which the green or dark color proceeds from a mingling of the yellowness of the bile with the blueness of lividity, are especially unpromising.

ICTERUS CALCULOSUS.—*Symptoms.*—Pressure upon the excretory ducts of the liver, by detaining the bile, will cause jaundice; such pressure may be from tumors in the liver, or from a scirrhous pylorus, or from specific disease in the head of the pancreas, or from a diseased duodenum. Besides, the ducts may be plugged up and the bile detained by inspissated bile or biliary calculi. The pain, attending the passage of gall-stones through the ducts, is often dreadful. With this pain, which comes and goes, there are much nausea and vomiting of usually sour matter, and sometimes hiccough; the patient is flatulent and dyspeptic, languid and gloomy. When the concretion passes into the intestines, the pain suddenly ceases, and all is well. One attack is very apt to be followed by others. The pain is not inflammatory, for, though there may be rigors, there is no fever, and the pain is usually *mitigated* by pressure. Still, after repeated straining and vomiting, there is some tenderness. Occasionally the pulse, during the pain, is slower than natural, and the skin cold. Sometimes, however, inflammation arises; the pulse becomes frequent, the skin hot, the epigastrium tender, the blood buffy, and thirst and headache are complained of. Sometimes the gall-stone makes its way, by ulceration, outwardly, or into the bowels. A gall-stone may enter and pass through the ducts, causing pain without jaundice; or the cystic duct only may be blocked up, or a calculus in the common duct may be angular, and still let the bile pass. Perhaps gastrodynia may be sometimes owing to biliary concretions. A large calculus permanently dilates the duct, and then smaller ones pass without pain. A large concretion sometimes lodges in the intestines, and causes serious obstruction. But generally they pass per anum, and can be found floating generally in the feces, if diluted with water. The gall-stones are rarely mere inspissated bile; ordinarily, they consist mainly of *cholesterine*. Biliary concretions seldom form in children; they occur much oftener in women than in men, especially in the corpulent, those who lead sedentary lives, use generous fare, sleep much, and neglect their bowels.

Causes.—Fits of anger, fear, great pain, may also cause jaundice; these

cases are often fatal with head symptoms, convulsions, delirium, or coma. The immediate cause of the icteric symptoms may depend on spasm of the gall-ducts, or, perhaps, on the sudden formation of an unusually large quantity of bile through nervous influence. Violent and long-continued vomiting, or pregnancy, may, by pressure, cause icterus. It disappears after child-birth. It is a symptom of acute and chronic hepatitis. It is caused by high and long-continued atmospheric heat. *Icterus neonatorum* is likely not icterus, the yellow hue depending on hyperemia of the surface. Still, true jaundice is possible, but rare at that age.

Prognosis.—This is generally favorable, unless the cause be some structural liver disease, or great mental or bodily shock; then it is bad or doubtful. It is worst in old persons with impaired constitutions, and when there is no obvious cause for the disease, especially when the skin is greenish or blackish.

LECTURE LXXVI.

TREATMENT OF JAUNDICE.—Some kinds of icterus are incurable; some are recovered from with or without any treatment. In icterus connected with acute or chronic hepatitis, use the treatment of hepatitis, (Lecture LXXV.,) and, unless the disease yielded sooner, urge the mercury to affect the gums.

To *icterus calculosus*, mercury is not so well adapted; the object being, not to increase the biliary secretion, but to remove the impediment to its excretion; or, if that be impossible, to ease pain. If the passage of a gall stone be attended by fever, or epigastric tenderness, leeches or venesection may prevent thickening of distended gall-ducts, or relax their spasm around the calculus. But, generally, blood-letting is not serviceable in this kind of jaundice. Opium, in full doses, is the remedy for loosening spasm and easing pain. When the pain comes on, one pill of pure opium, gr. i—or its equivalent—may be taken, and repeated once or twice in two hours, if the pain require it; more than this may be necessary. Patients should keep these pills about them. If the stomach rejects the pills, an enema may be given of laudanum, ʒ ss or i, in a small quantity of warm gruel. Warm bath is very useful, or hot fomentations to the epigastrium—the mustard poultice, the turpentine stupe. Dr. Prout praises large draughts of hot water with carbonate of soda in solution, (O i to ʒ i or ii.) The alkali is antacid, and the water foment the seat of the pain. The water at first is usually rejected, but, when continued, it is, after some time, generally retained. This plan eases the retching. Opium may also be given; laudanum—a few drops—may sometimes be added to the alkali solution, after being once or twice rejected. Pain being eased, give a brisk purge. When jaundice comes from moral causes and suddenly, the treatment is uncertain. It is not certain that the bile is the cause of all the cerebral symptoms. You might bleed, if the pulse warranted, but not otherwise. Whenever jaundice is intense and rapid in its accession, purging is indicated, as calomel, ʒ ss to i, and, a few hours after, oleum ricini, ʒ ss, with spirit of turpentine, ʒ ss. *Green jaundice*, arising from hepatic disease, can only be palliated by mild laxatives and anodynes and warm bath. For *icterus gravidarum*, delivery is the natural cure; aperients, carefully used, sometimes cure it. If an elastic swelling, whether a distended gall-bladder, an abscess, or a hydatid cyst exists, is palpable, and

adheres to the walls of the abdomen, it may be punctured; but under no other circumstances.

The *spleen* is liable to tubercles, to deposits of specific tumors and of bone, and to softening. Purgatives reduce hypertrophy of the spleen. Quina is the best remedy for the *ague-cake*. In splenic diseases, mercury, at least when in danger of affecting the gums, is bad; but *bromide* of potassium is said to have done good.

PANCREAS.—Diseases of it are few, and with no characteristic signs. The head of it may be affected by specific disease, thus causing jaundice, enlargement of the liver, and enormous and slowly fatal distension of the stomach, by preventing the aliment from freely passing through the duodenum. For pancreatic disorders there are perhaps no remedies.

KIDNEYS—NEPHRITIS, NEPHRALGIA.—Inflammation of these is *nephritis*; pain of them, *nephralgia*. Nephralgia is generally produced by the transit of a calculus from the kidney, through the ureter, towards the bladder; this is a "*fit of the gravel*."

Symptoms.—The symptoms of nephralgia are: pain, sometimes dull, oftener very severe, in the loins, usually on one side, often along the track of the ureter of the same side; numbness of the corresponding thigh; in the male, retraction, and perhaps pain, of the testicle; a frequent desire to make water, which is generally high-colored; nausea and vomiting. If to these symptoms there be added pyrexia, we have *acute nephritis* with its symptoms.

Causes.—The passage of gravel from the kidneys sometimes causes nephritis. Nephritis is rarely idiopathic; it is sometimes caused by cold; oftener, by calculi in the kidney, by a fall or blow on the loins, by the internal use of cantharides, or of turpentine.

Diagnosis.—Nephralgia pains are distinguishable from those of rheumatism and colic. In lumbago there is pain in the back, with or without fever; the pain usually affects both sides, is aggravated by movements of the loins, originates often in some strain or effort, is seldom accompanied by any notable trouble of the urinary functions, and, when extending into the thigh, mostly follows the course of the great sciatic nerve, and is not attended by nausea and vomiting; the pain of nephritis or nephralgia shoots along the track of the anterior crural nerve. The pain of colic is often associated with sickness and retching, and may occupy parts answering to the place of the ureters; but the urinary functions are undisturbed; and this is a capital distinction. Besides, the numbness of the thigh and drawing up of the testicle are characteristic, though often absent. In nephritis the testicle occasionally swells and becomes tender.

Terminations.—Effects.—When inflammation of the kidney lasts for a certain period without abatement, *suppuration* is to be dreaded. Such suppuration is marked, sometimes, by rigors, by throbbing perhaps, and perhaps by a remission of the pain. There may possibly be inflammation in the *parenchyma* of the kidney, without any noticeable local signs. Suppuration leads to ulceration, to renal fistules, a purulent discharge and hectic fever, and generally to death. Sometimes the pus passes with the urine. Renal calculi often cause *bloody* urine; yet this may come from other causes. They often produce abiding uneasiness or frequently recurring pain in the kidney, and gastric disturbance, especially when shaken by sudden motions of the body, or in those of intemperate habits; yet they often cause no pain while in the kidney. The pain often comes on and remits suddenly, the calculus having passed, likely, into the bladder, where it usually declares itself.

Treatment of Nephritis or Nephralgia Calculosa, when accompanied by fever, or occurring in the young and strong, being such as is proper in

severe colic or enteritis, any mistake at the outset between these disorders is not of much importance. Arrest inflammation; quiet existing, and obviate fresh, irritation. Venesection is sometimes proper; cupping freely the neighborhood of the suffering part is always advisable. Warm fomentations, the warm bath, enemata of warm water are valuable. Purge well as soon as possible. When other purgatives, given by the mouth, are rejected, calomel is often retained. Give those purgatives only which do not, when absorbed, irritate the urinary passages; therefore avoid the *saline* purgatives. Castor oil is good; or infusion of senna, with manna; or, if the stomach be very queasy, *pills* of cathartic extract and calomel. When there is no fever, *i. e.*, in nephralgia, and when a calculus is passing, purge and then allay pain by full doses of opium, either in form of pills, or by injection.

GRAVEL.—*Symptoms.*—*Treatment.*—The pain of a fit of the gravel terminates suddenly, and, generally, by the entrance of the calculus into the bladder. The symptoms of stone in the bladder are: a frequent desire to urinate; pain referred to the extremity of the urethra, especially just after urinating; and stoppages and renewals of the stream while urinating. The calculus may reach the bladder in a few hours, or in two or three days; sometimes the symptoms recur irregularly for weeks. Sometimes all the symptoms cease, and yet no calculus enters the bladder; it probably only enters, and then again falls out of, the beginning of the ureter. Occasionally the symptoms exist in the intemperate and luxurious when there is no calculus; these are cured by cupping the loins, purging, the warm bath, and two or three full doses of colchicum at short intervals. If the stone *entirely* shuts the ureter, the urine accumulates above and usually proves fatal by injuring the functions of the kidneys. When the calculus has got into the bladder, get it out before it grows too large, as it almost surely will, if let alone. Therefore, 1. Procure the abundant secretion of bland urine by ordering the free use of diluent drinks; barley-water, or linseed-tea, mixed with a little sweet spirits of nitre. 2. Lull the sensibility of the sphincter of the bladder and thus prevent the calculus from causing spasm of it, by full doses of opium at bed-time. 3. Keep the urethra open; and, if required, cautiously expand it and habituate it to the contact of a solid body, by daily introducing a full-sized bougie. When urinating, the patient should lean forward so that the stone might enter the outlet of the bladder; or he may kneel in a warm bath. A large calculus, once passed, is sometimes more easily followed by others. The condition of the urine must be constantly referred to. A patient has the gravel when he passes concrete matter, powder, sand, or little stones; not when the warm urine is clear and throws down earthy sediment on cooling, which again disappears on heating.

LITHIC ACID DIATHESIS.—*Diagnosis, Symptoms, &c.*—Healthy urine is *acid*. Pure lithic acid is nearly insoluble, and looks like red sand, or crystals. Lithate of ammonia is very soluble and reddens the vegetable blues. If the ammonia combines with another acid the lithic acid is deposited. Some medicines increase, some correct the lithic acid diathesis. This diathesis is known by the deposit, when the urine cools, of red or yellow sand, like cayenne pepper, lithic acid gravel, which does not dissolve when the urine is heated, nor make it turbid when shaken. The urine is bright, of a dark coppery color, is more acid and contains more urea than in health, and is apt to be less in quantity. There is also a tendency to feverish and inflammatory complaints; there are acidity of stomach and heart-burn, often gout or rheumatism. These patients are mostly indolent and luxurious, or intemperate in their living. Children up to puberty, but particularly adults beyond forty, are obnoxious to this

diathesis. In those whose urine is *habitually* or *often* of the kind mentioned, the nephritic pains will recur, for the lithic acid calculi are generally numerous. Still, a deposit of lithic acid or of lithates may occur in health under transient disturbing causes; as colds, fibrile ailments, too full a meal, or exercise taken just after a full meal.

Treatment of the Lithic Acid Diathesis.—Give alkalis to neutralize excess of acid. Soda sometimes unites with the lithic acid and forms an insoluble and therefore dangerous salt. The bicarbonate of potass is not thus dangerous; it is easily soluble; it is best given in the common saline draught. Magnesia is also good; but guard against its causing *intestinal* concretions. Dr. G. Bird suggests phosphate of soda which freely dissolves lithic acid; the dose is \mathfrak{D} i to 3 ss in broth or gruel. The vichy water is another remedy. The patient should live plainly and moderately, on one dish, avoiding acids, and everything likely to generate them; saccharine substances, starch of all kinds, and fermented liquors. These alkalis, when given too long, or too freely, may destroy the acidity of the urine, and an opposite but equal danger may result; *i. e.*, the formation of a *white* sand or gravel, which consists mainly of the triple phosphate of ammonia and magnesia. Urine, which only slightly reddens litmus paper, may still be capable of depositing the triple phosphate. Colchicum and the saline draught, also mercury, tend to diminish the acidity of the urine. We can almost always make acid urine neutral or alkaline; but to render alkaline urine acid is often impossible. Attend to the functions of the skin; prohibit any exposure that might injure healthy perspiration. The warm bath is often good, or, where it can be borne, the daily use of the cold or tepid sponging, with subsequent friction by the flesh brush, or hair glove. It may be requisite to act on the liver and bowels by mild aperients containing a little mercury. Enjoin warm clothing in cold weather and active exercise in the open air.

Phosphatic Diathesis.—*Diagnosis, &c.*—The tendency to the formation of the triple phosphates goes along with debility of the system, whether from physical or mental causes. The urine is pale, copious, slightly turbid or opaline, of a low specific gravity without a healthy smell, or faintly-smelling like weak broth. It is occasionally alkaliescent when voided; never more than slightly acid. As it cools the white sand is deposited, and often a film, or iridescent pellicle, consisting of the triple phosphate, forms on the surface. This urine speedily grows putrid and very offensive; sometimes it smells strongly ammoniacal. The intensity of the phosphatic disposition may be estimated by the rapidity with which the urine becomes alkaliescent. Occasionally the salt is deposited in the bladder and the issuing urine looks milky.

Treatment of Phosphatic Diathesis.—When the urine, just described, is passed, which does not redden litmus paper, but turns it, when reddened by weak acid, blue again, or even sometimes makes tumeric paper brown—in such cases avoid debilitating remedies; saline draughts, and alkalis; mercury and colchicum; bleeding; active purging. Give generous diet; tonics; bark, wine and acids; the muriatic acid, or nitric, or both together before meals. Opium is powerful in rendering alkaline urine acid; it also composes the nervous anxiety. Order mental relaxation, &c. The tendency to deposit the mixed phosphates is most often dependent on local disease in the urinary organs, especially in the bladder and prostrate glands; often it depends on injuries of the back.

Oxalic Diathesis.—In this, the tendency is to form in the kidney the oxalate of lime, or the *mulberry* calculus. The urine is bright and clear, and free from sediment. The calculus is solitary, or recurs at long intervals, and the diathesis prevails chiefly in the prime of life. It is most

usual among dyspeptics, who are liable to boils, carbuncles and scaly skin eruptions. According to their original temperament, they are nervous and irritable, or desponding. In a strongly marked diathesis, the color of the skin varies from dull greenish yellow in the sanguine, to dark olive or livid in the melancholic.

Treatment of the Oxalic Diathesis.—Prohibit the use of saccharine substances, of fermented liquor, *rhubarb* plant and sorrel, of *hard water*. Order pure, or even distilled water; animal food, and strong farinaceous matters, and weak brandy and water rather than beer or wine. Small crystals of oxalate of lime exist often in the urine and can be seen only by the microscope. In extreme cases the patient is very irritable, hypochondriacal, weak and usually emaciated. The mineral acids alone or combined with tonics, are good; also muriatic or nitro-muriatic acid for a *month*, but stop them when a deposit of the lithate of ammonia, or of lithic acid begins to be produced. Use this course of acids three or four times a year. Regulate the diet and forbid anxiety, study, &c. Moderate doses of nitro-muriatic acid an hour before meals, answers well. Iron is advisable in anæmic cases.

The *cystic oxide* diathesis, which is remarkable for the quantity of sulphur it contains, is rare.

LECTURE LXXVII.

SUPPRESSION OF URINE. ISCHURIA RENALIS, are names applied to those cases in which no urine is secreted; retention of urine, to those in which the urine, though secreted, is not voided. *Ischuria* is a term applied to both these conditions. The first belongs to the physician; the second, to the surgeon. Suppression of urine occurs usually in advanced life, and in the corpulent.

Symptoms, &c.—In Sir H. Hallford's cases, there was no pain, no sense of weight in the loins, no distension in any part of the abdomen, and no urine found in the bladder by the catheter; there was some nausea, a pulse somewhat slower than usual, and sometimes heaviness and oppression. Death soon supervenes, probably from the uræa in the blood poisoning the brain and causing coma. Suppression of urine for a considerable time is not necessarily and always fatal, as is shown in cases of cholera. Perhaps the natural secretion is compensated for by some vicarious or supplemental discharge. Patients have vomited, or passed by the bowels, watery matter somewhat resembling urine. Urinous fluid is said to have been found in the ventricles of the brain. In cases of suppression of urine a strong urinous smell is commonly found in the perspiration before death. This suppression is probably always a symptom, but, as its cause is very obscure, it is treated as a substantive disease. Extreme congestion or inflammation of the kidney is, probably, often a cause. Organic renal disease often gives rise to similar symptoms; so also do impervious ureters. The cessation of the excretion *altogether*, Sir H. Hallford always found a fatal symptom.

Treatment.—Cupping on the loins; venesection, if warranted by the pulse; the hot bath; sudorifics; purgatives; and large warm enemata, seem to be indicated. To try to force the secretion of urine by strong diuretics seems hazardous; but, if sanctioned by experience, the best drug, probably, is cantharides in the solid form, gr. i at a time; and place a large blister on the loins.

DIABETES (*διαβαίω*, to pass through) is the passage of a permanently too large amount of urine; it is scarcely less fatal than total suppression, but less rapidly so. Still there may be an excessive flow of urine without diabetes; as in hysterical and nervous persons, in cold weather, and after the use of certain drugs and articles of food.

Kinds.—Diagnosis.—Diabetes has been divided into *insipidus* and *melitus*. The term *insipidus* is objectionable; for diabetic urine always contains more or less sugar. It is light-colored and transparent, of a pale straw, or greenish tint, of a scent like sweet hay or milk or, faintly, of apples, of a sweet taste, always contains sugar, and is of a higher specific gravity than healthy urine. Urea is as abundant, generally, in the urine, and sometimes more so than in health, though the sugars interfere with the proper tests. Excepting the sugar, the standard chemical constitution of the urine exists. Sugar does not exist in healthy urine. A healthy person passes O i or ii or iii or iv in the twenty-four hours; but in diabetes O xiii are common, even O lxx or more are sometimes voided daily. Sometimes the urine dries on the patient's clothes and leaves white spots. The specific gravity of healthy urine is between 1015 and 1025; of that of diabetes, between 1030 and 1060.

Tests.—1. Yeast causes diabetic urine to ferment. 2. This urine, when boiled with an equal quantity of liquor potassæ, assumes a claret color, of more or less depth, according to the quantity of sugar present. 3. Just enough of a solution of sulphate of copper mixed with the urine to make it faintly blue, with liquor potassæ added in considerable excess, forms a dark blue solution. If this solution be gently heated to ebullition, a dense red deposit takes place.

Symptoms.—The skin is arid and unperspirable, yet occasionally the surface becomes humid, especially as the fatal end approaches; the bowels are mostly costive, and the feces very solid and dry; the tongue is dry and sticky, sometimes very red and clean; the thirst is inordinate; and the appetite is often equally keen. Wasting, hectic fever, a feeling of emptiness and sinking at the stomach, debility, chilliness of the body, especially of the extremities, aching and a sense of weariness in the loins and legs, aversion to exercise, loss of virility—all are generally present. Besides, there are uneasiness in the stomach after meals, flatulence and acid eructations, dimness of vision, redness of the whole interior of the mouth, sponginess of the gums, looseness of the teeth, and some irritation and inflammatory redness about the external orifice of the urethra: these last are symptoms attending death by inanition. Again, listlessness and depressed spirits, weakness and peevish temper, and an odor of the breath and person like that of the urine exists.

Complications, &c.—Diabetes is generally chronic, creeping on insidiously, and, if rightly treated, spreading over many years. Yet it is sometimes acute, breaking out suddenly with much febrile disturbance, and running a short course uncontrolled by any treatment. Much oftener it proves fatal through the supervention of some organic mischief, such as debility is apt to develop. It is often associated with lung disease, especially phthisis; sometimes it ends in incurable dropsy; sometimes, apoplexy or stomach affection suddenly kills the patient. It usually *follows* skin complaints; but *accompanies* or *precedes* those of the areolar tissue, as carbuncles, and malignant boils. Itching is not uncommon.

Anatomical Characters.—Pathology.—After death, the kidneys have been found vascular and hypertrophied, which are rather effects than causes of the disease. The fault in diabetes is that the stomach, instead of chyle, prepares sugar, which enters the circulation, where it has been found; but *why* the stomach acts thus is not known.

Causes.—Of these little is known. Diabetes is not very common; it runs sometimes in families and is inherited. Among the predisposing causes are: long-continued intemperance, especially in the use of spirits; severe evacuations; excessive labor, with a poor acescent diet; distress and anxiety of mind. Exposure to cold, and drinking large draughts of cold fluid while the person is hot and perspiring, are exciting causes.

Prognosis.—Diabetes is often fatal, but not necessarily so. Apparent recoveries, even cures, for many years, are common. There is no real security as long as the specific gravity of the urine is unnaturally high; for the small causes, exposure to cold, an intemperate meal, &c., may bring back the symptoms in their severity.

Treatment.—Three objects are to be kept in view. The first and most important is to restore the defective powers of digestion; the second, to cut off, or restrict the supply of saccharine matter; the third, to mitigate or remove distressing symptoms. The first has not yet been accomplished. For the second, give animal food only, and of any kind the patient desires. Prohibit vegetables, for from them are chiefly derived the saccharine principles. Green garden-stuff is less injurious than potatoes and those vegetables which contain a notable proportion of sugar, gum or starch. Forbid all kinds of fruit. As little bread as may be, should be used, and that well fermented and somewhat stale, or well-toasted, especially the bran loaf, or bran cakes. Eating too largely, even of animal food, at one time, may endanger life. The quantity of drink should be limited; animal broths are proper, and, when given tepid, are more likely to be used in moderation. If the patient must have something else to slake his urgent thirst, the best drink is distilled water acidulated with phosphoric acid. The water of the Bristol Hot Well, which contains carbonate of lime in solution, is praised. As claret contains no sugar, it is excellent. When the thirst has already been much indulged, the quantity of liquid taken must not be greatly reduced all at once, for sudden failure of the vital powers may result. Drs. Watt and Satterly affirm that small and frequent bleedings increase the strength, diminish the clamminess of the mouth and dryness of the skin, and cause the blood to show the buffy coat. *Blood-letting* is best used when the malady is recent, with febrile disturbance; but in chronic cases, in the old, and when the debility is great, it is seldom proper. Local bleeding relieves local uneasiness; leeches to the epigastrium, if there be tenderness there, or a sense of fulness, or of burning in the stomach; cups to the loins, if they greatly ache. *Opium* quiets nervousness, allays many symptoms, restrains the discharge of urine, and seems to control, but does not banish, the sugar. Moderate doses generally suffice; as Dover's powders, grs. iii to v, thrice daily. If the ipecac. in this powder disagrees with the stomach, substitute an equivalent of any other preparation of opium. Sometimes forced perspiration, induced by the hot-air bath, is very beneficial. Employ friction and, especially, warm clothing. *Steel*, combined with opium if necessary, or with any other medicine which the condition of the patient may render needful, is sometimes useful in repairing the strength. Regulate the bowels with purgatives; castor oil, rhubarb, aloes, lenitive electuary: the purgative salts are not appropriate, for they are apt to be diuretic. *Creasote*, in small doses, has been found sometimes to diminish the quantity and density of the urine. You should not go on increasing the dose. Dr. Prout considers the deposit of lithates a sign of a return to a better diathesis; moreover, he found mercury almost invariably do harm.

Diabetes *Insipidus* is chronic diuresis. Of this there are three varieties: 1. *Hydruria*, in which there is merely an excess of the watery material. 2. *Anaxoturia*, in which, with an excess of the aqueous ingredient, there is a deficiency of the absolute quantity of the urea. 3. *Azoturia*, in which, with

the excess of water, there is also an excess of the urea. Anazoturia is often symptomatic of Bright's disease. The urine of azoturia, though of an unnaturally high specific gravity, contains no sugar, for the yeast test does not cause fermentation. Recoveries from azoturia are common. The *causes* and *treatment* of chronic diuresis are uncertain.

LECTURE LXXVIII.

ALBUMINOUS URINE.—The *albuminous* is more common, and generally not less serious, than the saccharine condition of the urine. Healthy urine contains no albumen.

Tests.—Heat to the boiling point and nitric acid are the tests of albumen in the urine. Both give flaky precipitates, and, to avoid mistake, should both be used with different portions of the same urine at the same time, and with the same portion in succession. If *mucus* render the urine hazy, filter it before testing. The amount of albumen is proportionate to that of the curdy flakes precipitated by the test. Heat alone may be a fallacious test, for it will not precipitate the albumen of neutral or alkaline urine, but may, on the other hand, cause a flaky precipitate of the earthy phosphates, even though there be no albumen. This fallacy is remedied by nitric acid, which precipitates the albumen of alkaline urine, and, by restoring its acidity, makes the albumen discoverable by heat; moreover, it re-dissolves the spurious precipitates, thrown down by heat. Nitric acid alone may also be fallacious, for it may occasion a flaky precipitate of lithic acid when there is no albumen. Heat obviates this fallacy, for it re-dissolves this precipitate. Employ 3 i of urine to gutt. ii of nitric acid. A drop of urine slowly evaporated in a watch glass held high over the flame of a spirit lamp, leaves the albumen firmly adherent to the glass.

BRIGHT'S DISEASE.—*Anatomical Characters.*—Albuminous urine often accompanies and bespeaks a very serious organic disease of the kidney, called *Bright's kidney*, or Bright's disease, or *granular* degeneration, though it is not always granular. The anatomical changes proper to this renal disease are neither very definite nor very constant; they relate to the size, figure, consistence, and internal and external color of the kidney. The unnaturally large kidney appears commonly in the earlier stages, when, generally, it is also soft; the unnaturally small kidney, to the later stages, when, especially, it is hard. Sometimes the kidney is of the ordinary size. The average weight of the adult kidney is four ounces. Both the increment and the decrement belong principally, if not altogether, to the cortical portion. The color of the kidney is various.

Symptoms.—Another state of the kidney, which is of a recent date and sometimes, probably, the first stage in the disorganizing process, is *sanguine congestion*. Its symptoms are: fever, preceded often by rigors; uneasiness or dull pain in the loins; nausea and vomiting; a very scanty secretion of urine, which is sometimes tinged with blood, and always albuminous; occasionally complete suppression of urine. To these there is presently added, generally, sudden and general anasarca, commonly called inflammatory, active, or febrile dropsy. If the secretion of urine be entirely suspended, death soon ensues by coma; but if not, the disorder is often fatal by the supervention of some acute internal inflammation; pleurisy, pericarditis, pneumonia, or peritonitis. Many recover completely from the condition expressed by this combination of pneumonia. Many seem to recover, but bear about with them the germs of those more chronic and

latent changes, which constitute "Bright's kidney." Some of the signs which indicate the presence of those changes are the same, in kind, as those which denote the acuter disorder, only less in degree and slower. The patients are subject to obscure lumbar pains, to sickness from time to time, and retching, and their urine is apt to be red, brown, or dingy, as well as albuminous, from the admixture of the coloring matter of the blood. They are obnoxious to inflammation of the serous membrane, and especially to head affections, of which they often die; drowsiness, convulsions, apoplexy; most of them become at length anasarcaous. Gradually increasing pallor is almost constant; disease of the heart is common; and the skin is generally, even in the absence of fever, very dry and unperspiring. There are a frequent desire to urinate; flatulence, and capricious bowels, which are sometimes obstinately constive, sometimes prone to diarrhœa. All these symptoms (the nocturnal micturition and the state of the urine excepted) being common in other diseases, have no special reference to Bright's disease. They are secondary consequences, and, therefore, *indirect* symptoms of this disease.

Diagnosis, &c.—There may be albuminous urine, and yet no Bright's disease; as after the use of some kinds of food, occasionally under the influence of mercury, or of a blister to the skin, in the crisis of some febrile disorders, sometimes in pregnancy, or when blood mingles with the urine. Bright's disease may exist *unaccompanied* by albuminous urine. The albumen is apt to disappear from the urine, for a time, even suddenly; as sometimes after the hot air bath, or the purging of elaterium. Finding albumen in the urine, we may judge of the existence of Bright's disease, partly by often testing the urine and noticing whether the albumen be transitory or persistent, partly by the absolute amount of the albumen in a given measure of urine. Moreover, the specific gravity of albuminous urine is very low, averaging not more than 1013, and being even sometimes 1004. The solid ingredients of the urine, which in health consist mainly of urea and certain salts, and which amount to 67 or 68 parts in every 1000, are diminished to 12 or 14, and even 6 parts. The urea, which is deficient in the urine, is not converted into albumen, but remains in the blood and is the cause, most likely, of the secondary affections belonging to the disorder, and of its great fatality. The albumen is robbed from the blood; the blood loses fibrin and coloring matter, and its serum is lowered in specific gravity. Of healthy serum, the average specific gravity is 1030; in this malady it descends to 1024, 1020, even to 1013.

Stages.—When the chronic disorder is not a legacy left by febrile dropsy, it is apt to creep on insidiously, and its history is not fully known. Of this malady there are two stages: the early and the advanced. In the former, the urine is generally scanty; instead of $\frac{3}{4}$ 40 in twenty-four hours, the patient voids 16, 12, 8, even 2 or 3. Sometimes the secretion is nearly or quite suppressed, and then the head seldom fails to be affected. The urine is red or dark, obscurely turbid like muddy beer, froths more than usual, and rises into bubbles when blown into through a tube; its specific gravity is about 1021, perhaps seldom so low as 1016, and it contains much albumen. Blood drawn from the arm shows the buffy coat; the serum is much reduced in density, and contains much urea; the fibrin is not decreased, but perhaps a little increased; the amount of coloring matter is not greatly changed. In the more advanced stages, the quantity of urine often equals, and sometimes much exceeds, that of health, thus constituting one variety of chronic diuresis, (*anazoturia*,) sometimes called diabetes insipidus. It is usually pale, slightly opaque, and of a very low specific gravity; 1014, 1010, 1007. Albumen is present, but less certainly than in the earlier periods; it is sometimes entirely absent. The declension of

density augments as the disease advances. In any stage, the supervention of febrile disturbance, from whatever cause, tends to renew, for the time, those qualities of the urine which belong to the early period. The disease advancing, the serum of the blood recovers more or less its specific gravity, in proportion to the decrease of albumen in the urine. Sometimes the fibrin seems to diminish. The most characteristic change, and one which causes the peculiar pallor, is the rapid disappearance of the coloring matter—hematosin. Venesection hastens this change.

Secondary affections are: anasarca, head symptoms, headache, drowsiness, delirium, epileptic seizures, apoplexy. These brain affections almost always follow any great diminution, or the entire suspension, of the secretion of urine. The stupor and coma may result from anasarca or liquid in the brain; or *possibly* from urea in the blood, though often this may not affect the brain; or, sometimes perhaps, from the pale and watery condition of the blood. In this disease there is a readiness of various organs to inflame, particularly of the serous and mucous membranes, and more especially of the pleura and bronchi; so that after death, most commonly, various organs are found diseased. Such intercurrent acute inflammation often causes death. Disorder of the stomach and bowels often accompanies the renal malady; nausea, vomiting, flatulent distension, diarrhea. The renal disease, by inducing anemia, tends to generate cardiac disease, though probably *both* are sometimes effects of some common cause; as intemperance, for example. But whether the cardiac ever produces the renal disease, is more questionable. In acute cases, when early fatal, the kidney is always found gorged with blood. The presence of blood in the urine, during life, probably denotes this same condition. From this state of engorgement spring, apparently, the subsequent changes. Cardiac disease often causes congestion of the venous system, but not necessarily albuminous urine, or any structural change in the kidney. Pain or tenderness of the loins, sometimes only, accompanies the renal disease, and then principally in the early stages.

Causes.—These are often obscure; exposure to wet and cold is a cause of the acute disease, and of the chronic. In the chronic it is probable that the disorder previously existed in the latent state. The chronic form occurs sometimes after apparent recovery from febrile dropsy. Intemperate habits are a predisposing cause. The disorder often follows a sudden check or suppression of the catamenia; and sometimes, blows on the loins. The complaint happens at all ages, especially to adults, and those males. It is presumable that all the various structural changes may be ultimately traceable to undue accumulation and stagnation of blood in the kidney. This blood or its constituents may ooze out and get into the urine, and into the interstitial texture of the gland, altering its size and color, obliterating its texture, and spoiling its functions. The alteration in the equalities of the urine may be caused by the secreting power of the whole gland being interfered with, but not suspended; or, more likely, by portions of the gland being spoiled, and portions remaining sound and effective.

LECTURE LXXIX.

ANASARCA.—This is commonly, but not necessarily, a secondary consequence of Bright's disease. The dropsical accumulation adds to the patient's distress and danger. Over it we have more control than over

any other consequence of the renal disorder. Mostly, at the outset at least of the dropsy, the skin is dry and the urine scanty; and the anasarca increases or decreases, as the quantity of urine diminishes or augments. The sluggish movement of the blood, from cardiac debility, and its watery state, tend to cause effusion of serum. *Anasarca* is the filling up of a large part, or of the whole, of the subcutaneous areolar tissue of the body with watery fluid. When there is also fluid in the large serous cavities, it is *general dropsy*. The serous infiltration may be slight, being noticed about the ankles after some hours in the upright posture; or extreme, the integument everywhere being stretched, even to bursting. With this, the peritoneum is generally full of liquid, and at length the pleuræ; and finally there is water in the ventricles of the brain and in the pia mater.

Symptoms.—The effects of the water through the whole body are, shortness of breath and palpitation of the heart; a sense of suffocation on lying down, or stirring actively; tightness and distress across the epigastrium, relieved somewhat by eructation, augmented by food and drink; weight and stiffness of limbs; and sometimes drowsiness. The shortness of breath may depend on œdema of the lungs, on water in the pleura, on the pressure upwards of the diaphragm.

Kinds.—The complaint may be sudden, active, febrile; or slow, insidious, passive, chronic. All, or nearly all, the forms of chronic dropsy are *cardiac* or *renal*. These are often combined in the same person.

CARDIAC DROPSY.—*Symptoms*.—*Pathology*.—*Causes*.—We judge the dropsy to be cardiac if thoracic symptoms, as cough and dyspnea, preceded the dropsy; or if direct signs of cardiac disease exist, as distended jugular veins, irregular movements of the heart, unnatural impulse, altered sounds; or if some previous acute disease, especially of the left side of the thorax, existed; or if acute rheumatism previously existed; or if old age makes it probable that some organic changes in the heart and large blood-vessels are in progress; and if there be no sign of renal disease. Dropsy is a consequence of those kinds of heart disease only which offer some permanent obstruction to the flow of venous blood. It is especially associated with dilatation of the right chambers of the heart; this dilatation is not necessarily attendant on the general accumulation of water. Structural disease in the heart or lungs tends to cause disease, sooner or later, in the other, and that in a direction opposite to the course of the blood. Thus disease at the aortic orifice, hindering the exit of blood, causes hypertrophy of the left ventricle, with or without dilatation. When the mitral valve is affected, the left auricle and pulmonary veins become choked and distended and the lungs congested, causing dyspnea whenever the heart receives an unusual amount of blood, or is oppressed by any thing that diminishes the capacity of the chest, a full meal, flatulence, lying down. Afterwards, the dyspnea becomes constant. The pulmonary plethora may be relieved by increased bronchial secretion, which thus protects the right heart. At last, the evil augmenting, the right ventricle becomes implicated and unable duly to propel the blood, and then dilated, causing congestion of the venous system. Symptoms of this congestion are, prominent veins of the neck, irregular pulse, preternatural impulse, perhaps, of the heart, occasional shortness of breath, large crepitations habitually in the lower part of the lungs, more or less expectoration, sometimes tinged, sometimes loaded, with blood, then swelled ankles, and finally universal dropsy. These are often noticed in the old. Many signs of heart disease may precede the dropsy: intermission and irregularity of its movements, palpitation, and the impulse of hypertrophy. When dropsy supervenes, there are added the signs of dilated right chambers; the beating of the heart heard and felt beyond the præcordial limits; feeble and unequal

pulsations; liability to fluttering palpitations, to extreme and panting dyspnea on the slightest exertion, on taking food, on lying down; a dusky skin; and, likely, livid lips and extremities. The anasarca first appears about the ankles, when the patient stands; sometimes it is confined for a long time to the legs; finally the loins and flanks become doughy, the serotum fills, fluid collects in the serous sacs of the abdomen and thorax; in extreme cases, the dropsy is universal, pervading the head, face, and upper limbs—the œdema *pits*. Vesications sometimes occur on the limbs; sometimes sloughing, which gives vent to the fluid, and relief to the patient. Dropsy may result from diseases which impede the flow of blood through the lungs; pneumonia, pleurisy, tubercles, large vomicae, especially *emphysema* of the lungs. The imperfect nutrition, wasting diarrhea, &c., render anasarca unusual in phthisis pulmonalis.

RENAL DROPSY.—When the renal complaint sets in suddenly and with acute symptoms, the dropsy usually supervenes *soon*. So, in chronic renal disorders, anasarca is apt to appear or increase when there arises local inflammation, or febrile disturbance. In cardiac dropsy, the anasarca begins in the lower extremities; in renal, in the upper, in the face, &c. The more rapid and copious the effusion, the less do the parts pit. In this renal dropsy, the accumulation in the larger serous cavities is not, generally, a prominent feature.

Symptoms.—Diagnosis.—We may suspect the kidney to be at fault, if there exist no adequate derangement of the lungs or heart; as shown by the respiration, by the sounds, pulsations, motions, &c., of the heart, and by the distension of the veins of the neck. The kidney and heart may both be affected. If the dropsy depends on *heart* disease, the cheeks and lips are occasionally florid, often purplish or livid, frequently dusky and loaded; sometimes the face and mucous membrane are pale, as in chlorotic women; but in *renal* dropsy there is a characteristic hue, a lack of red blood, and an unhealthy dingy sallowness, significant of deep-seated alteration of structure. Our suspicion, that the kidney is at fault, is strengthened by the previous existence of illness, attended, perhaps, by temporary acute dropsy.

Causes.—Intemperate habits, though they affect other organs than the kidney, are sometimes a cause of renal dropsy; exposure is another cause. Sometimes the cause is not apparent.

Pathology.—“Bright’s kidney” is present: 1. In most cases of febrile dropsy, including those which are consequent on scarlet fever. 2. Likely in all cases of anasarca, when the parts do not pit—this rule is not certain. 3. In most, or all cases of dropsy, attended with *diuresis*, provided the urine be not saccharine. 4. In all dropsies when the urine is of very low specific gravity (below 1010) but of natural quantity, whether it be albuminous or not. There are probably very few exceptions to the last two rules.

Prognosis.—Dropsy depending on Bright’s disease often yields to treatment, but is prone to recur. Of the renal disease itself the prognosis is very unpromising. The appearance of oil in the urine is probably always a fatal omen.

Treatment of Cardiac Dropsy.—In chronic general dropsy, the kidneys being sound are the first channel through which to get rid of the fluid by means of diuretics. These failing, and the bowels permitting, the next resort is to drastic or hydragogue purgatives. Diuretics are very uncertain, being sometimes very serviceable, oftener useless. When the urine is strongly acid and deposits, on cooling, a brick-dust sediment, try, first, the alkaline diuretics, particularly the salts of potass; nitre added to the common saline draught; or a combination of the acetate and bicarbonate

of potass; or the bitartrate in small doses; or the iodide of potassium; or the liquor potassæ: the tincture of squills acts as an antacid and diuretic. Benzoate of ammonia acts as a diuretic; also digitalis: small quantities of the tincture or of the infusion of which may be added to other formulæ; or the powdered leaves may be combined in pills. One of the best modes of using digitalis is to give large doses of the infusion, as $\frac{3}{4}$ ss, in some cordial water, every four or six hours, till three doses are given; then to pause and note the effects, and to repeat the three doses, or not, accordingly. Other diuretics are: spirit of nitrous ether, and the compound spirit of juniper and of horseradish, added, if desired, to most of the diuretic liquid formulæ. As vehicles for more active ingredients, use diuretic vegetable infusions or decoctions; as the decoction of broom-tops, or of juniper berries, or of wintergreen, or the infusion of buchu. Squills, turpentine, the tincture of eantharides, are stimulant, and more adapted to non-febrile cases, and to obstinately inactive kidneys. A combination of diuretics sometimes is more efficacious than larger doses of them given singly; and the addition of mercury often assists some of these combinations; as a fluid drachm of the official solution of the bichloride in each dose of a mixture; or a small quantity of calomel, or of the blue pill when the medicines are given in solid form. Of this kind is a pill of pilula hydrargyri grs. iii or iv, mixed with gr. i of dried powder of squills, and gr. ss of dried leaves of digitalis; given twice or thrice, daily. Mercury assists squills and digitalis. To purge, use medicines which produce copious and watery discharges; a combination of jalap and cream of tartar. Gamboge gr. i or ii, with cream of tartar $\frac{3}{4}$ i, in peppermint-water $\frac{3}{4}$ ii, and given twice or thrice daily is a good cathartic. Or cream of tartar $\frac{3}{4}$ ss, in peppermint-water $\frac{3}{4}$ vi, may be given in one dose every morning. Croton-oil and elaterium are drastic hydragogues; as gutt. i or ii of the former, and gr. $\frac{1}{4}$ to i of the latter. If anæmia or cachexy of the system has produced the dropsy, give strength and repair the blood by nutritious food and tonics, especially steel. If there be violent palpitation of the heart, with a strong heaving impulse, apply leeches, occasionally, to the præcordia.

Treatment of Renal Dropsy.—In chronic cases, pure or mixed, the treatment is not accurately ascertained. Acute and febrile symptoms may be much relieved by bleeding; but this should be done only when clearly demanded, owing to the serous state of the blood, which may readily transude outward, or be the cause, probably, of some of the alarming symptoms. Pain in the loins, at the same time, might indicate the use of cups there. Blood drawn from a vein usually shows the buffy coat. As, primarily, the kidney is often and probably always congested, diuretics are likely hazardous. Relieve the loaded areolar tissue and cavities through the skin, or through the bowels, by drastic cathartics, if they are not irritable and there is no diarrhea. Acting powerfully or steadily on the cutaneous transpiration is sometimes very beneficial; for this, warm or hot-air baths are better than common warm-water or vapor baths, for dry heat is more strongly sudorific, and there is less risk of fatigue or exposure to cold, as it can be applied in bed. Diligently use diaphoretics at the same time. These measures failing, and diarrhea forbidding the use of drastic purgatives, we must try diuretics, whether they accelerate the kidney disease or not, especially such as seem to stimulate the kidneys the least; as bitartrate of potass, digitalis, or better, perhaps, these two simultaneously. Diuretics may fail; or acting, may not reduce the anasarca. Mercury is perhaps not admissible as it rapidly destroys red blood; yet some patients have appeared to recover altogether after a furious salivation.

Mechanical Means.—All else failing, ease is often afforded, life prolonged;

sometimes even perhaps a cure is achieved, (in either kind of general dropsy,) by mechanical means. By removing the fluid and diminishing tension, pain or threatening inflammation or mortification of the integument may be averted or lessened. Artificial *blisters* are very dangerous, leading often to gangrene. *Incisions* with a lancet on the legs seldom heal, but slough and often hasten death. *Acupuncture* often gives great relief. The punctures are made with a fine needle, at least an inch and a half apart, not too many or too deep, nor into any fascia. There is more danger when made on the legs, than on the thighs. Sometimes the punctured surface gets red, erysipelas supervenes, is difficult to arrest, and the patient sinks. In such cases, keep the limb horizontal, and apply strips of linen wetted with a solution of Goulard. Mead recommends the making of only one incision on either leg, on its inside two fingers-breadth above the ankle, and through the areolar tissue. *Tapping* may be necessary—see Lecture LXVII. When the fluid has been got rid of, we must (except in cases depending on debility and anæmia, and independent of organic disease) prevent re-accumulation of the water, by remedial measures addressed to the faulty organs.

Precautions.—In *cardiac* dropsy, besides the medicines already specified, temperance and regularity of life must be enjoined, and the avoidance of all active, bodily or mental action and whatever hurries the circulation. In *renal* dropsy, besides the medicines already mentioned, the patient should avoid exposure to cold and vicissitudes of the weather, and keep warm by wearing flannel from head to foot, and, if possible, resort to a warm climate. Counter-irritation, as blisters or issues to the loins, may do good.

Diet and Drink.—In the chronic forms, let the diet be nutritive but unstimulating. Let the patient do as he pleases in regard to the quantity of drink.

LECTURE LXXX.

CHYLOUS URINE.—Sometimes the urine appears to contain chyle; it looks white and milky and stiffens, on cooling, into a tremulous jelly, like *blanc mange*. The coagulum separates into two portions; the white liquid portion, after a few hours, is covered by a creamy, oily matter, and the other portion is a delicate fibrinous mass, fleshlike, and reddish from the coloring matter of the blood. Such is the urine when passed a few hours after a full meal; but after a long fast the urine is only opalescent, and the coagulum small. The organs of assimilation and the kidneys, thinks Dr. Prout, are at fault, permitting the chyle to pass unchanged. This disorder is rare; a tropical climate seems to be a predisposing cause; drinking cold water while the body is warm, and, perhaps, exposure to cold, exciting causes. The patient may live under the disorder for years.

Symptoms.—In the slighter cases there are usually some feverishness, some uneasiness in the back and loins, some thirst, a dry skin and torpid bowels; in severer cases, the symptoms approach to those of diabetes, the thirst is more urgent, appetite craving, there are some emaciation and debility, and the urine is apt to coagulate in the bladder and be difficult to void. Occasionally the complaint ceases, even for years, and then recurs, without any apparent cause; it is therefore considered purely functional.

Treatment.—Of this little can be said. In chronic cases, the mineral acids, astringents, as alum and the acetate of lead, opium, counter-irritation, have given temporary relief. Gallic acid (which was frequently given to the amount of 3 ii daily for weeks) has done good. Tannic acid has been used. Rest abates the disease, exercise aggravates it.

HÆMATURIA.—Blood colors the urine bright red, or dark, or brown like coffee, or blackish. Some substances, taken as food, redden the urine; prickly pear, or *cactus opuntia*, beet-root, madder, some kinds of strawberries, sorrel and logwood, rhubarb, also senna, give the urine, if alkaline, a blood-red color. Often, fever and acute inflammation, or, occasionally, obstinate dyspepsia, connected with organic disease, incline the urine to a red or pink color. This is best noticed when the urine is put into an opaque, shallow, white vessel. The urine may be black without containing blood, as in jaundice sometimes, when the concentrated yellowness seems to be blackness, but by dilution is shown to be yellowness; occasionally mellanic acid blackens the urine. When there is much blood in the urine, some is deposited in the vessel; if there is only a little, the urine is of a smoke-brown, or dull cherry color; besides, the deposit, if blood, does not re-dissolve on heating. Bloody urine tinges white linen red. If there is blood in the urine, heat, gradually raised to the boiling point, throws down a grayish-brown precipitate of albumen and the coloring matter of the blood, leaving the liquid clear and of a natural tint. The best evidence of blood in the urine is furnished by the microscope; under it the blood corpuscles have non-granular surfaces, are of uniform size, and a yellow color.

Sources, Causes, &c.—The blood may come from one or both kidneys; from one or both ureters; from the bladder; from the prostate gland; or from the urethra. Idiopathic hæmaturia is very rare. Bloody urine is passed in that acute kidney affection which has been mentioned as lying at the root of most, if not all, cases of febrile dropsy. The albuminous urine of chronic Bright's disease sometimes contains blood. Hæmaturia is occasionally vicarious of other hemorrhages, especially of hæmorrhoides, and therefore sometimes called *hæmorrhoides vesicæ*. It also occurs in the course of constitutional disorders, especially scurvy and purpura hemorrhagica. It is sometimes a fatal symptom in typhus fever, small-pox, measles, and the plague. It is often caused by calculous matter in the kidney or bladder, or by its passage through the ureters, or bladder, or urethra. Again, it may be caused by malignant fungous growths in the kidney or bladder. Hemorrhage may take place from the surface of the bladder from chronic disease, non-cancerous, of that membrane.

Diagnosis.—Symptoms.—When the blood is derived from the *kidney*, it is, generally, equally diffused through the whole urine; but, when from the bladder, it generally comes away in greater or less quantities at the end of the discharge, the first part being nearly pure urine. The red particles of the blood, discharged in the earlier stages of fungoid disease, appear larger than natural, and, having subsided to the bottom of the urine, resemble somewhat lithic acid gravel. In a more advanced stage of the disease, there is often a dark-colored, offensive bloody sanies in the urine, and some mechanical impediment in passing it. The expulsion, with the urine, of slender cylindrical pieces of fibrin, commonly whitish and like slim maggots, is characteristic of hemorrhage from the kidney, or the commencement of the ureter. The bleeding is presumed to come from the kidney, or the upper part of the ureter, when it is accompanied or preceded by a sense of heat, or weight, or by pain in the situation of the kidney, especially if these feelings are confined to one side of the body. Calculi, known to have come from the kidney, strengthens this presumption, and a fit of gravel together with the hæmaturia, renders it certain, if there be no symptom of stone or disease in the bladder. When no symptoms referable to the kidney or ureter exist, but those only referable to stone or disease of the bladder, or to a diseased prostate, as mucus mixed with the blood, occasional retention or a sudden stoppage in the stream of urine, pain referred to the glans penis just after urinating, then we conclude that the

blood proceeds from the bladder. Pure blood, coming away guttatim or in a stream, with no desire before or at the time to urinate, is probably derived from the *urethra*. Mechanical injury and a strong determination of blood to the genital organs, may cause the urethra to bleed. In a case, produced apparently by excessive sexual intercourse, a bougie, left in the urethra for a short time, effected a cure. Blood may regurgitate into the bladder from the urethra and coagulate there, simulating vesical hemorrhage. Bloody urine, with no pain or symptoms pointing to any particular part as the seat of the hemorrhage, is generally *renal*, depending on earthy concretions in the kidney. Pus globules in the blood strengthen this conclusion. Cancerous disease of the kidneys or bladder may also cause painless hemorrhage, but it is very rare, (unless propagated from neighboring parts,) and may usually be known by the qualities peculiar to the blood of cancerous growths. If a fall, shock, jolting on horseback, &c., give rise to painless hemorrhage, the source of the bleeding is likely the *kidney* which contains calculi. If similar movements cause hæmaturia when there is stone in the bladder, there will then be pain in the bladder. Hæmaturia, whether painful or not, is sometimes attended with severe rigors. The records of physic mention many cases of periodic hæmaturia. Blood in the bladder, from whatever source derived, may coagulate there and cause retention of urine with all its evil consequences, or supply a nucleus for "stone."

Treatment.—This often resolves itself into the treatment of the disorder of which it is a symptom. A bladder distended with blood, which causes complete retention of urine, may be emptied by a large-eyed catheter and an exhausting syringe, cold water being occasionally injected to break down the coagula. If the hemorrhage be profuse, soon filling the bladder again, cold water injected into the rectum or bladder is sometimes of great use; or, these failing, alum. grs. xx to xl, in each pint of water, may be injected into the bladder; this seldom fails, even in malignant disease. Among remedies given by the mouth are: acetate of lead; Ruspini's styptic, which consists mainly of *gallic acid*, and alcohol diluted with rose-water; extract of rhatany root, (*krameria*), as \mathfrak{D} i in water, thrice daily; *uva ursi*, bistort, tormentil, the pomegranate, kino, catechu, and the preparations of gall-nuts; all of which and the *krameria* contain gallic acid. Gallic acid itself, given three or four times a day, in doses of grs. v to x, suspended in water by mucilage, answers very well. When the urine is alkaliescent, the steady use of the muriated tincture of iron is very beneficial.

DISEASE OF THE SUPRA-RENAL CAPSULE—BRONZED SKIN. — *Symptoms*.—Gradually increasing weakness, paleness, thinness, generally without emaciation, mental and bodily languor, flabby muscles, a soft and commonly very feeble pulse, and a slow death, or death by convulsions. The skin is jaundiced-looking, *bronzed*, especially on the uncovered parts of the body, but the conjunctiva and finger-nails are white, and there is no bile tinge in the urine. This hue, when partial, occupies principally the front of the body, the limbs, especially the thighs. When universal, it is deepest in the flexures of the body, the arm-pits, &c. The rest of the skin is sometimes blanched. The hair on the head and pubes, corresponding to these spots, becomes perfectly white. An offensive odor is sometimes exhaled. The bronzing is occasionally absent, probably when the disease is partial or recent.

Anatomical Characters — The capsules are sometimes cancerous, or enlarged, or atrophied, or calcareous, or soft.

Treatment.—This should be strengthening; quina, ale, iron, &c.

Prognosis.—This disease is mostly fatal.

ABDOMINAL TUMORS.—*Kinds*.—Of these, the principal are: 1. Those

from lodgments in the bowels. 2. Ovarian tumors. 3. Enlarged liver, from congestion, from interstitial adipose deposit, or malignant growths, or hydatids. 4. Swelled spleen, from fulness of blood or specific deposit. 5. Large kidneys, from malignant disease, or pent-up pus or urine. 6. Enlarged mesenteric glands; also, cancer of the peritoneum, especially of the omentum; tumors connected with the uterus; aneurisms of the aorta; distended gall-bladder.

Diagnosis.—We judge of the character of a given tumor by its place, by the associated symptoms, and by observation of the regular performance or disturbance of particular functions. A tumor may press on, and disturb the functions of, a healthy organ. We distinguish tumors of the liver, ovary, and kidney by percussion. Any other tumor than the liver, in the right hypochondrium, leaves usually, when the patient is recumbent, a palpable sulcus above it, or a space in which the sound is different from that yielded by the liver. In the case of an ovarian and renal tumor, the intestines lie behind the one, and in front of the other, and affect the sound accordingly. Movable tumors are generally intestinal, omental, or ovarian. Pulsating tumors are not necessarily aneurisms; they may be other tumors lifted by a healthy artery. The occurrence of hæmatemesis or melæna tends to prove that a tumor in the right hypochondrium is hepatic; in the left, splenic.

Pathology.—Though the affected organ be known, the nature of the tumor may be obscure. For instance, in the case of the liver, if the tumor be large, smooth, roundish, of slow growth, the general health not being materially deranged, it is most likely an *hydatid* tumor. If, on the edge and surface of the liver, large inequalities and projections are felt, the complexion and health failing, the tumor is, most probably, *cancerous*, especially if there be other traces of carcinoma in the system. Small, hard irregularities betoken *hobnail* liver. In phthisis, a large liver, without pain or jaundice, is, presumably, a *fatty* or waxy liver. By a similar mode of investigating other tumors, we may detect their nature.

LECTURE LXXXI.

RHEUMATISM.—Kinds.—This is a painful and sometimes very dangerous disease. There are two species, the *acute* and the *chronic*. The chronic is often, but not necessarily, a sequel of the acute. Rheumatism is inflammation of the *fibrous tissue*, yet it sometimes involves other tissue by *contiguous sympathy*; as the synovial membrane of the joints, or the pericardium, or the endocardium. It is most common in the ligaments and tendons of the *larger joints*. It is a *specific* inflammation; for suppuration and gangrene are not events of it, though they occasionally are of common inflammation of contiguous parts.

Symptoms.—*Acute* rheumatism consists in redness, heat, pain and swelling (inflammation) of the parts around, or composing one or more of the larger joints; generally of several at the same time, or in succession; with a disposition to shift from one joint to another, and to certain internal organs, especially the membranes of the heart; and with fever. The sudden shifting (metasis) of the inflammation from joint to joint, or to several joints, is remarkable; it disappearing, at the same time, totally, partially, or not at all from the other joints. The ankles, knees, knuckles, wrists, and elbows are most commonly affected; the shoulders, hips, and finger-joints often, and the jaws occasionally. The most dangerous metas-

tasis is to the heart—*rheumatic carditis*—Lectures LXI. and LXII. The shifting inflammation of the larger joints is attended with high, inflammatory fever; a very full, bounding pulse; flushed cheeks; headache; profuse, drenching, sour-smelling perspiration, which distresses and weakens the patient, but does not relieve pain; a white-colored, dirtyish, thick fur on the tongue, which is red at its tip and edges; and turbid and acid urine, which deposits copious, brickdust-like sediment. This fever does not tend to a typhoid form. The intellect is not affected, except in carditis, and then violent delirium is apt to ensue from sympathy with the cardiac disorder. Throughout this febrile disturbance there is no coma, no marked trouble of the stomach or bowels, no vomiting, no diarrhea, no petechia, no sordes of the mouth; all which are usual in common continued fever. The pain of the joints is exquisite, being increased by pressure or motion. The patient can, but *dares* not, move his limbs. The pain is more constant than the swelling; swelling, than redness.

Varieties of Acute Rheumatism.—There are two varieties of acute rheumatism; *fibrous* or *diffused*, and *synovial*. In the first, the inflammation begins *near*, not *in*, the joint; attacking tendons, fasciæ, ligaments and possibly muscles. At first there is not much swelling or redness; what redness there is, follows the tendons in streaks. After some duration of the pain, there are puffiness and pitting or *œdema*. In the synovial variety, which is more frequent in the knees, the pain which marks the outset is soon followed by swelling, tight and elastic, caused by fluid in the *cavity*; with slight redness generally, and fluctuation often. The symptoms already mentioned, *i. e.*, high inflammatory fever, bounding pulse, &c., belong to the fibrous kind. In the synovial form the fever is less intense, or soon moderates after the joints swell; the tongue is less foul; the sweating is much less. This form has been called *rheumatic gout*, and is more nearly allied to gout than to rheumatism. Gout and rheumatism are very similar in kind. The tendency of the inflammation to affect the cardiac membranes is much greater in the fibrous than in the synovial disease.

Causes.—Prognosis.—Exposure to cold, especially when combined with moisture is the, perhaps only, exciting cause of acute rheumatism. Poison in the blood is the predisposing cause. This poison is probably a product of unhealthy assimilation. Acute rheumatism prevails chiefly from the age of puberty to that of thirty-five or forty, but often occurs in children. The younger the patient, the greater is the danger of carditis. Apart from the cardiac affection, acute rheumatism has no danger; the articular inflammation usually ends, sooner or later, in recovery, whether the heart be implicated or not.

Treatment of Acute Rheumatism.—The disease is not very obedient, or not steadily obedient to any remedial plan. In the first attack of the fibrous form, with bounding pulse, &c., especially in the young and robust, free and early venesection, almost always, mitigates and calms the fever; it occasionally cuts short the attack, (but this you should not aim at;) and it prepares the body for other remedies, calomel, opium, purgatives, colchicum. But the relief from bleeding is seldom complete or permanent; it may sometimes with propriety be repeated. The blood remains ready to show the buffy coat long after the lancet ceases to be useful or safe. Forced perspiration is useless. The preparations of colchicum, premised or not by venesection, are sometimes very useful; and often when most so they affect the stomach and bowels. If, though they cause deadly nausea and vomiting, griping and diarrhea, the rheumatism does not give way, stop them. The colchicum is of most service in proportion as the synovial or gouty symptoms predominate. Large doses are not requisite. You may give of the wine or tincture, \mathfrak{m} xx every six hours, till it produces

some result; or a grain of the inspissated juice, or of the acetous extract, every four hours. Under this treatment the disease sometimes vanishes in three or four days, and occasionally when there have been no sickness and purging. Free purging from day to day, at the outset, with calomel and black draughts, brings prompt relief; as calomel grs. v to ℥ i given every night, and followed every morning by a draught of senna and salts. These doses may be repeated, according to circumstances, for three or four days, provided they continue to procure dark stools without griping pains, scalding of the rectum, or mucous or bloody discharges. In weak persons do not bear hard purging; besides frequent going to stool increases pain and exposes to cold. Sometimes a grain or more of opium combined with the calomel, quiets pain and prevents the calomel from running too rapidly through the bowels, for, besides its purgative effect, the full influence of mercury is essential. Moderate doses of calomel and opium, every six or eight hours, with occasional mild purgatives, sometimes cure. Alkalies or the alkaline salts are fit remedies; nitre and the alkaline carbonates; bicarbonate of potash ℥ ii in solution, every two hours, night and day, for several days. An excess of grs. xxx to xl of the alkaline carbonate may be given in an effervescing draught every three or four hours, while the fever is high and the joints are swollen and painful. Acetate of potass in some aromatic water, or bitter simple water with a few drops of oil of lemon, acts very well. With this, blood-letting, calomel, purgatives, opium, colchicum may be combined according to circumstances. Take into account the age and strength of the patient, the period of the disease, the degree of heat and fever, the condition of the pulse, the preponderance of pain, the state of the abdominal secretions. In the synovial form the treatment should be less active. Bark is useful in convalescence; the decoction of cinchona fortifies the body against the recurrence of the attacks. Guaiacum, iodide of potassium, lemon juice have been lauded.

Local Remedies.—Warm fomentations act charmingly; carbonate of potass or soda ʒ iv–vi, hot water ʒ ix, Battley's liquor opii sedativus ʒ vi. Thin flannel, soaked in this hot lotion, is applied to the inflamed joints, and the whole is wrapped in a covering of thin gutta-percha. Leeching and cupping are useless. Cold applications are hazardous, for they may drive the disease to a more serious point.

SUBACUTE RHEUMATISM is intermediate between the acute and chronic: the inflammation is not intense in any joint, but lingers in many; the fever is moderate; the joints are hot and painful; the skin is dry; there is some thirst; the urine is almost always lateritious and strongly acid. Alkalies do well: as liquor potassæ f ʒ i daily, for several days; and keeping the bowels open by laxatives. Nitre has been recommended.

CHRONIC RHEUMATISM.—Of this there are two kinds. One is attended with local heat, swelling and pain, increased by pressure, motion, or external warmth, and perhaps with some pyrexia at night, the constitutions sympathizing little or not at all. The other is characterized rather by cold, stiff and painful joints. The former is near allied to the acute, into which it sometimes passes and of which it is often the sequel.

Treatment.—This form, like the acute, requires antiphlogistic remedies, only less vigorously applied. In these cases there is less fear of driving the inflammation to some vital part, by leeches and cold washes to the painful joints. Otherwise the principle of treatment is the same. The complaint is often obstinate and prone to recur, and frequently cripples the smaller joints, especially of the knuckles and fingers. In the other, or *passive* form, the treatment is friction of the painful joints with stimulating liniments; warm bed; warm clothing, flannel from head to foot;

warm climate; warm baths, especially salt, and not less than 100°; warm douches; vapor or hot-air baths; also stimulating internal medicines; turpentine; some of the animal oils, as cod-liver oil, gualiacum. Opiates often relieve pain; the best form is Dover's powders, *i. e.*, *pulvis ipecacuanha compositus*. The iodide of potassium is good, especially when the periostium is the principal part affected; ordinary dose is gr. v thrice daily.

GOUT, *podagra*, is much allied to acute rheumatism, and yet is distinct from it.

Symptoms.—The attack generally begins an hour or two after midnight, by pain in one foot, mostly in the ball of the great toe, but sometimes in the heel, instep, ankle. With the coming on of the pain there is generally cold shivering, which ceases as the pain gets worse, and is succeeded by heat. The pain grows intolerable, and is of a grinding, crushing, wrenching, burning kind. There is exquisite tenderness. About the ensuing midnight the pain remits, sometimes gradually, sometimes suddenly, leaving the part red, swelled, tense and shining, with œdema and turgid veins. These symptoms recur, in a mitigated degree, for some days and nights, and then go off often entirely for a long interval. As the œdema and redness disappear, desquamation takes place, and is generally attended with troublesome itching. Such is a first attack in an adult. The attacks are mostly preceded by disorder of the stomach, diminished appetite, flatulence, heartburn, nausea perhaps. During the paroxysm the urine is very high-colored, acid, turbid and deposits a copious brickdust sediment. The stools are pale, or dark green, and very offensive.

Course of the Disease.—The disorder is very apt to recur; at first every three or four years, then yearly, then oftener, the fits being each time more protracted, till at last, they are absent only, perhaps, for two or three months in summer. As the disease advances, every fit includes both feet in succession. It passes, too, into other joints, large and small, of the upper and lower extremities. As the fits occur more frequently, the pains are generally less violent, but the general health suffers more. After the earlier attacks, the joints usually recover their former strength and pliancy; but after many, they remain weak and stiff, and sometimes powerless. Often, after repeated attacks, *chalk-stones*, concretions like chalk, form around and outside (sometimes inside) the joint and, in general, immediately beneath the skin, interfering with or entirely preventing motion of the joint. This matter is at first semi-fluid, like soft mortar.

Causes.—*Complications*.—Gout is *hereditary*, but may be staved off and averted. It may also be generated by certain habits of life. It attacks especially men of robust, large bodies, of large heads, of corpulent habits, and men whose skin is covered with a thicker *rete mucosum*, which gives a coarser surface. Its access is promoted by a full and luxurious life, and by sedentary and inactive habits. Gouty persons are usually subject to nephritic complaints, to fits of the gravel, to renal and vesicular calculi. These disorders and the paroxysms of gout alternate; or the children of these patients suffer, some the gout, others, especially *females*, nephritic affections. The urinary concretions and the morbid states of the urine belong to the *lithic* diathesis. The chalk-stones are mainly urate of soda, which is sometimes abundantly deposited in the *urine*. These concretions are incidental to the more chronic forms of gout. Finally, the cuticle over them gives way. Gout sometimes attacks females, chiefly after the catamenia entirely cease. It comes on, most frequently, between the ages of thirty and forty; rarely before puberty.

IRREGULAR GOUT.—*Symptoms*.—Gouty persons are subject to derangement of the digestive organs, of the heart and lungs, of the brain and

nerves. There is indigestion, with its concomitants, impaired appetite, sickness, vomiting, flatulence, heartburn, acid eructations, gastrodynia. Pain and cramps occur in the trunk, shoot to the upper extremities, and are relieved by eructation of wind. The bowels are irregular; colicky diarrhea sometimes existing, but oftener costiveness. The patient is apt to be hypochondriacal. When the thoracic viscera are affected, the patient has palpitations, fits of dyspnea, faintings, or even pangs like angina. In the head occur pain, giddiness, transient affection of the vision, and hearing, threatenings of palsy and apoplexy. These symptoms often all clear away on the breaking out of a paroxysm of gout in the foot. These symptoms indicate one kind of *irregular* gout, sometimes called *atonic*, *lurking*, or *masked* gout. Another variety of irregular gout, called *retrocedent*, begins, as ordinary, in a joint, but the pain and inflammation disappear suddenly and entirely, while severe and alarming symptoms arise suddenly in some internal part, most commonly the stomach, which becomes affected with a feeling of anxiety and distress, with sickness, vomiting, or violent pain, which is probably spasmodic. More rarely the metastasis is to the heart when syncope or urgent dyspnea ensues; or to the head, when it may terminate in apoplexy or paralysis. Occasionally gout, in other parts than joints, is inflammatory; as gouty inflammation of the urethra, with scalding and a puriform discharge, simulating gonorrhea; gout in the eye; gout in the testicle; gout in the throat. Wine and malt liquors appear to foster the disposition to gout much more than distilled spirits. The *predisposing* causes are sensual indulgences, want of bodily exercise, luxurious life, the large use of animal food, of wine and malt liquors, with indolence.

Causes.—The *exciting* causes of gout are many: a severe debauch; strong mental, especially depressing, emotions; excessive fatigue, especially from walking; external injury. The first attack of gout often fixes upon the seat of an old hurt; and a very slight recent injury sometimes determines a paroxysm; a trifling bruise or sprain, tight shoes. Weakness often favors the eruption of the malady.

Distinction between Gout and Rheumatism.—In gout, the small joints are first and chiefly affected, especially the joint of the great toe; in rheumatism, the large. The redness in gout is brighter and more vivid than in rheumatism, and the fluctuations between agony and ease are greater and more frequent. Gout usually affects one joint only at a time; rheumatism often many. The inflammation in gout is attended with turgid veins, and more oedema than in rheumatism, and is followed mostly by desquamation and itching. Gout, unlike acute fibrous rheumatism, is not attended with drenching acid sweats. Gout is hereditary; rheumatism is less distinctly so. Gout occurs rarely or never before puberty; rheumatism, sometimes. In gout, there is no tendency to earditis; in rheumatism, that tendency is very marked. Gout is more common among the rich; rheumatism, among the poor. Gout is often, rheumatism never, associated with chalk-stones. Gouty patients are restless; rheumatic, helpless and motionless. In the advanced state of gout, when many joints become involved, inquiry into the previous history and early attacks will help the diagnosis.

LECTURE LXXXII.

GOUT—*Continued.*—*Pathology, &c.*—The *materies morbi* of gout is generated, or detained, within the body, and finally explodes in the foot. The implication of more than one joint, and the metastasis sometimes to some vital organ, are owing to the *materies morbi* (lithic acid, perhaps, or some of its compounds) being carried about by the blood. The same, *mutatis mutandis*, may be the pathology of acute rheumatism. Gout in the *extremities* is not a mortal disease; but when it proves fatal, it is by translation of it to some vital part, to the stomach, the heart, the lungs, the brain. As the early visits of gout are generally followed by a striking improvement in the health and feelings of the patient, it is commonly thought to clear the system of all other disorders. It does indeed clear it, for the time, of those disorders which result from the poison of gout. It is therefore an error to neglect ailments supposed to depend on the lurking gout, in the hope that a fit of the gout will cure them. It is a more dangerous experiment, that of trying to force on such a fit by excess and intemperance, for there is the fearful peril of some fatal internal seizure. The more numerous the fits, the faster does the general health break, and the more stubbornly do the associated symptoms cling to the patient.

Treatment.—This is twofold; that proper during the paroxysm, and that proper during the intervals between the paroxysms. All artificial evacuations, as blood-letting, purging, diaphoretics, during a fit of the gout, are believed to be useless or hurtful and dangerous, as they recall into the blood and the viscera the peccant matter, which nature had already thrust into the extremities and joints, whence it might be dispersed by insensible transpiration. Immersing the affected joint in cold water to extinguish the inflammation is bad. *Colchicum* may be accounted a specific for the gouty paroxysm. It almost magically eases the pain, (how is not known;) it is an anodyne; it is apt to prodnce nausea, faintness and diarrhea, though these effects are not necessary to insure its curative influence; it renders the urine less acid, and even alkaline, and increases its quantity. These preparations of colchicum are all valuable: the wine of the bulb; the wine of the seed; the vinegar of colchicum; the acetous extract; the inspissated juice of the plant. In a fit, you may give of the *vinum colchici*, ℥ xl or lx in a saline draught, at bed-time; and half a drachm more, in a warm black dose, the next morning; and you may repeat this sequence if the gout continues. Some give ℥ xx every six hours, with ʒ i of Epsom salts, and ʒ i of syrup of poppies in the draught, till the symptoms yield; but the other plan is preferable. In this way the pain is usually calmed, and the swelling reduced in a few days, or even hours. But you must not be satisfied with thus quelling the pain and inflammation. Some say that colchicum cuts short the patient's life; that he very seldom lives more than two or three years afterwards. If this be true, the fault is more the patient's than that of the medicine; for if the gout be expelled from the toe without the observance of abstinence more than a day or two, and without any depletion or further medication at the time, there is a probability of an attack of some formidable internal complaint. To eradicate the lurking residue of the mischief, you might continue giving small doses of the colchicum; of the wine ℥ v, two or three times a day, for a while. If that remedy does not prove aperient, give purgatives; not violent purgatives, for these weaken the patient and thus strengthen the power of the gouty virus. With mild cathartics, moderate doses of mercury will generally be advisable

to correct disorder of the liver; and the patient must pursue abstinent, or, at any rate, strictly temperate habits, in respect to meat and wine. •Probably a fit of the gout might be averted if the colchicum were given in small *alterative* doses, on the first occurrence of the ordinary premonitory symptoms; the headache, asthma, derangement of the digestive organs. Hypochondriasis is often symptomatic of gout in the male, hysteria likely in the female. Cases are recorded of instantaneous cures of gout by strong mental emotions, by sudden terror, by violent wrath. Sometimes, however, a fit has been *brought on* by a mental shock.

The *treatment* in the *Intervals*. This must be chiefly regimenal. A single debauch, a glass or two of champagne, even an unusual indulgence in the use of animal food, may bring on an attack. The *young* should become teetotallers; but the *old*, and those whose health has been broken by the disease, must be allowed a certain quantity of their accustomed good cheer, or they become an easy prey to the disease. Avoid the opposite dangers, excess and debility. The young and the hearty can scarcely take too much exercise; the old and the dilapidated can. The exercise should not be *violent* or fatiguing, lest it excite a fit; it should be *habitual*, daily, not by fits and starts; it should be *active* muscular exercise, not passive. Walking is the best exercise; it may be conjoined with riding on horseback. Early and regular hours should be observed, and severe mental application avoided. To be effectual, this regimen must be adopted early, as soon as the disease threatens, and steadily persevered in. The Portland powder has gone out of fashion as a prophylaxis. So has the following: orange peel $\frac{3}{4}$ ii. powdered rhubarb $\frac{3}{4}$ i, and pulvis aloes cum canella $\frac{3}{4}$ ii, steeped for a week in a quart of brandy, and given in doses of a tablespoonful of the strained infusion, mixed with two or three spoonful of water, night and morning. A better prophylaxis is, a few grains of rhubarb, with twice as much magnesia, daily; or some light bitter infusion, with tincture of rhubarb and about fifteen grains of the bicarbonate of potass. Preventive remedies of this kind are often useful by improving the digestive process; but *when exclusively trusted to* as substitutes for temperance and exercise, they are unsafe.

GOUT IN THE STOMACH.—*Symptoms*.—When gout attacks the stomach, either by retrocession or primarily, it often proves rapidly fatal. The gastric affection is not, generally, inflammatory; for the attack, which consists of violent pain and a sense of weight or constriction in the epigastrium, with sickness, vomiting and a disposition to faint, is often relieved by stimulants.

Treatment.—Symptoms like the above have been caused by indigestible food, and removed by an emetic. In gout, antacids will often remove the pain; magnesia, in full doses, with rhubarb. If this fails, opium may be tried; and if it should be vomited, opiate enemata may be used. Dr. Heberden thought opium and hot spices more efficacious and less inconvenient, in these cases, than wine and spirits; but when they fail, a glass of brandy will often allay the pain completely. The mustard poultice or the turpentine stupe, applied over the epigastrium, has done great good. Whatever may be the internal organ on which the retrocedent or misplaced gout has settled, we are justified in endeavoring to induce gout in the extremities, not by internal stimuli, but by enveloping the feet in a mustard poultice. As actual gastritis does sometimes seem to ensue, these cases are alarming. The occurrence of *tenderness* with the pain, and of fever is perhaps the only means of distinguishing the inflammatory affection from the non-inflammatory. Treat such cases as you treat ordinary gastritis, taking no further heed of the gout, except to apply stimulating cataplasms to the feet.

CUTANEOUS DISEASES.—The various morbid appearances presented by the skin have been divided into seven kinds: 1. *Papular*, *pimples*; little, red, solid elevations of the cuticle, containing no fluid, of uncertain duration, and terminating often in scurf. They are supposed to denote inflammation of the papillæ; as in the earliest outbreak of small-pox. 2. *Squamæ*, scales; small, hard, thickened, opaque, whitish patches of unhealthy cuticle, with red subjacent surface; as in lepra, psoriasis, and often in syphilitic eruptions. 3. *Exanthemata*, rashes; superficial, red patches, of various figures and sizes, and irregularly diffused; as in scarlet fever, measles, &c. 4. *Bullæ*, blebs; miniature blisters; large portions of cuticle raised by a thin, transparent liquid, with inflammation beneath; as in erysipelas sometimes, and in pemphigus. 5. *Pustulæ*, pustules; circumscribed elevations of the cuticle containing pus, and having red inflamed bases; as in common boils, and in small-pox at its maturity. They end in crusts and scabs. 6. *Vesiculæ*, vesicles; small elevations of the cuticle, covering a fluid which is generally clear and colorless at first, but becomes whitish and opaque or pearly; as in cow-pox, and chicken-pox. These differ very little, except in size, from the bullæ, and often terminate in small scabs. 7. *Tuberculæ*, tubercles; small, hard, superficial tumors, circumscribed and permanent; or, if they suppurate at all, it is only partially. Sometimes they slowly ulcerate at the summit; as in the imperfectly suppurating pustules of the modified small-pox, and in certain spots, often found on the face, particularly of young persons.

LECTURE LXXXIII.

THE EXANTHEMATA.—*Their Characters, &c.*—These are contagious diseases, attacking a person once only, beginning with fever, and attended at a definite period with small eruptions, often numerous and scattered over the skin. These characters are not universally true, perhaps, of all the forms of disease to be noticed here, but they apply more or less exactly to continued fever, to the plague, to small-pox, chicken-pox, measles, scarlet fever, and erysipelas. A *contagious* disorder is one, which is in *any way* communicable, whether by contact or infection. Some diseases are more strongly contagious than others. Small-pox is never known to originate spontaneously. Some persons are more readily affected by small-pox than others; and the same person more so at one time than at another; some even seem incapable of taking this disease; the same may be said of other kindred diseases. Age seems to have something to do with these variations. Infants are but little susceptible of the operation of contagions. Debility is a predisposing cause. The poison of scarlet fever operates less certainly on adults than that of small-pox, or of measles. Small-pox sometimes slumbers, or is *sporadic*; sometimes it is *epidemic*. The same is true of other complaints of this group. In the epidemic exanthemata the disorder is generally most fierce at the outset, and gradually subsides, because the number of susceptible persons gradually diminishes, and because the weak and those of a peculiarly susceptible constitution are earliest attacked. Different epidemics vary in malignity and character, owing to the *epidemic constitution of the season*, and therefore the practice varies accordingly. At one time or place inflammatory symptoms run high; at another there is an early tendency to debility and sinking. Those disorders which attack a person only once are, all of them probably, contagious; but the converse does not hold, for

syphilis, purulent ophthalmia, the itch, are contagious and yet liable to attack the same person many times. Small-pox has affected the same individual twice and even *thrice*. In these cases the primary attack was, sometimes, not always, mild, and the interval between the attacks perhaps always considerable. This susceptibility to repeated attacks seems to run in families. No contagious disease furnishes complete future protection against itself. Small-pox is less often suffered a second time than is measles; measles, than scarlet fever. A well-marked attack of continued fever affords some protection against its own recurrence. The plague is said to afford a temporary safeguard against itself. Erysipelas is more apt to recur than any other malady of the group.

The Eruption.—In the febrile exanthemata, this supervenes at a fixed time after the commencement of the general fever, and is an effect of the contagious poison; but in inflammatory fevers or phlegmasæ, the local inflammation commonly precedes the pyrexia. These diseases, therefore, would more rightly be called *blood* than *cutaneous* diseases. This eruption, though in the majority of cases, a symptom *distinctive* of the disorder, is not essential; for authors speak of morbilli sine morbillis, of scarlatina sine scarlatinâ, and even of variolæ sine variolis. Besides, the lenticular mottled eruption which is often manifest in the earlier stage of continued fever, is often absent. The same happens in other cutaneous diseases, measles, scarlet fever, the plague.

The time at which the eruption comes out differs in different diseases; and even occasionally in the same disease. As a rule, the spots of small-pox begin to show on the third day: that on which the sickness and fever commence being reckoned the first. But when the disease is confluent and therefore severe, the eruption shows itself occasionally on the second day; and when distinct and mild, sometimes, not till the fourth. As a rule, the eruption of measles appears on the fourth day, scarcely ever sooner, though often later—on the fifth or sixth day, or even later. The rash of scarlet fever most generally appears on the second day; sometimes perhaps on the first. In severe and unfavorable cases, it may be postponed till the fourth day, or longer. The eruption, which is tolerably constant in some kinds of continued fever, is less regular in its arrival. The period of *incubation*, *i. e.*, the period between the reception of the poison and the supervention of distinct symptoms, differs in different diseases, and sometimes in the same disease. In continued fever it is very uncertain, the *average* being, perhaps, ten days; in small-pox it is usually about twelve days, except in cases of inoculation, when it is seven days; in measles it is from ten to fifteen days; in scarlet fever it is not more than from four to six days; in the plague it generally does not exceed a few days, nine or ten perhaps.

THEORY OF CONTAGIOUS FEVERS.—Contagious febrile disorders are produced by *animal* poisons. Some inorganic poisons may enter the blood and emerge unaltered, chiefly with the urine; or they may act as medicaments, causing salutary changes; or they may act as strictly poisonous. Other inorganic poisons enter into permanent chemical union with the constituent tissues of particular organs, thus injuring their functions, and if the organ be a vital one, causing death.

But the animal poisons, those at least with which we are now concerned, effect changes in the blood, whereby they abundantly reproduce themselves. The eruptive disease that ensues seems to be an effort of nature to expel this morbid matter. The following is Liebig's theory concerning contagious fevers: "The specific animal poison requires, for its reproduction in the blood, a certain ingredient in that fluid. If that ingredient be of vital necessity, the poison acts fatally—perhaps this is the *modus operandi* of the poison of hydrophobia. If this ingredient be wanting, the poison is

not reproduced. If this ingredient be naturally present, and is exhausted for a while, at least, by the poison, the particular disease cannot, for a time, be again produced. If the ingredient is not an essential component of the blood, it may never be replaced, or only after a long interval; in some persons even it may never exist, or only at certain periods of their lives, or under the influence of peculiar modes of life." This theory may help to account for the temporary or permanent protection which some contagious diseases furnish against their own return; for their definite periods of incubation, and their determinate course; for the non-susceptibility or little susceptibility of some to the influence of the poison; for certain deviations from the regular course and type of these diseases; for the slowness, halting, irregularity, recession and reappearance of the symptoms, which precede and usher in the eruption; for the *incompleteness* of the series of symptoms; for the absence of catarrhal symptoms in measles, of the rash in scarlet fever. Glandular enlargements and chronic abscesses, which are frequent *sequelæ* of the exanthemata, may represent the imperfectly eliminated dregs of the virus.

Modes of Communicating the Poison, &c.—The poisonous effluvia from the bodies of the sick enter the blood of others, chiefly through the lungs in breathing. Perhaps it may be spontaneously absorbed through the skin; therefore, the smearing of the body with oil to shut out the contagious of the plague. The virus may enter the blood directly; as in inoculation in small-pox, in measles, in the plague. The effluvia in small-pox, measles, and scarlet fever, operate at the greatest distance; in continued fever this range is less; in the plague it is probably very small. Some suppose the plague is communicable only by contact; but it is more likely that you may *touch* the patient with impunity, if their breath, or the effluvia from their bodies be not inhaled. Where ventilation is complete, the sphere of the operation of the gaseous poison is very limited. Small-pox is readily propagated either in hot or cold regions. The plague does not spread when the temperature is below 60° or above 90° Fahr. The vaccine matter, if exposed for a certain time to extreme cold or to a heat of 95°, loses its property of producing the cow-pox. Typhus fever, measles, and scarlet fever are said to occur very rarely in the inter-tropical regions. Dr. Henry has, therefore, proposed to destroy certain contagions, lurking in fomites, by artificial heat.

CONTINUED FEVER.—Typhus and typhoid fever are two distinct diseases, as shown by their symptoms, course, duration, fatality, exanthematal markings, anatomical characters, and cause. The *relapsing* fever is readily distinguished by its own features.

TYPHUS FEVER.—Continued fever commences in different ways.

Symptoms.—The preliminary symptoms often result apparently from an altered condition of the *nervous* system, produced by poison in the blood. The patient becomes pale, languid, abstracted; he looks very ill, is feeble and easily tired, indisposed to mental or bodily exertion, apprehensive often of impending evil; he loses his appetite, his tongue becomes white and inclined to tremble; his bowels are irregular, often confined, rarely affected with diarrhea; his senses lose their delicacy; he has uneasiness or wandering pains in various parts of the body; occasionally there is some giddiness, drowsiness, perhaps, during the day, and unsound sleep at night; the patient *droops*. In other cases these preliminary movements are entirely wanting. The regular onset of the fever is often marked by a *shivering fit*; commonly, by severe *headache*, pain or aching across the forehead, rarely in the temples, never at the back of the head; or sometimes by a sense of heaviness and vertigo; sometimes by *diarrhea*, attended, perhaps, with pain or uneasiness in the abdomen. Symptoms arise, even

thus early, which denote nervous disturbance, or *febrile oppression*, viz. : a dull, heavy, absent expression of the face ; a stupid, drunken appearance of the patient ; a little stagger in his walk ; muscular debility, &c. These symptoms occur sometimes in other kindred disorders, as the plague, for example. Bleeding causes faintness or syncope more easily in *continued fever* than in *inflammation*, thus helping occasionally to distinguish incipient fever, attended, for instance, with catarrhal symptoms, from pure pneumonia.

Stages.—Continued fever is divided into three weekly periods, for the sets of symptoms occupy *about* seven days each.

Symptoms of the First Week or Stage.—The *first week's* symptoms, many of them, belong to the sanguiferous system ; there are increased frequency and hardness of the pulse, increased heat of skin, thirst, headache, and throbbing of the temples. Sometimes the pulse is slower than natural. Its acceleration is greatest in those of irritable constitutions, in the young, in females, in weak or delicate males, rising often to 120 ; while in strong adults it may not exceed, at any time, 100. The disease is severe when the pulse reaches 130 or 140 ; and the majority of such patients die. An irregular pulse is a worse sign even than a very frequent but regular one. It is almost always soft and soon becomes weaker. In typhus fever it rises slowly and then slowly falls, in typhoid fever it varies much. The skin is generally hot and dry, and feels to a bystander very hot and *pruigent*. The thirst is usually troublesome for the first few days. The tongue becomes clammy or dry, sometimes it is clean and smooth ; oftener furred ; its edges and tip will, perhaps, be red, while a white fur covers the rest, or is divided in the middle by a straight, brown streak, which is often the first step to dryness and blackness of the tongue. The abdomen is full and resonant without being sensibly distended ; sometimes it is concave ; it is often tender, but most frequently it is natural. The lining of the air-passages is often slightly affected from nearly the first ; some quickness of respiration, some diffused rhonchus and sibilus. The nervous system is evidently affected ; the patient's features are fixed and inexpressive, or expressive only of indifference. Though his sensibility seems blunted, he as yet answers rationally if spoken to briskly. Delirium does not generally come on till towards the end of the first week. The muscular power is greatly depressed ; the patient lies on his back, motionless, being unable to sit, or often to lie on his side, or turn well in bed ; he sleeps little, waking often, being disturbed apparently by uneasy dreams ; he *fancies* he does not sleep at all, or he lies with his eyes open, but is insensible. This is much more common in typhus than in typhoid fever, if it be not peculiar to the former. Sometimes, even during the first stage, when the bowels are relaxed, such is the prostration of strength, or the tendency to stupor and indifference, that the patient passes his stools in bed. The urine, during this same stage, is scanty and high-colored, and ill-smelling often. Towards the very end of this period, the peculiar eruption of continued fever sometimes begins to show ; but this is sometimes postponed to the next stage. Death seldom occurs during the primary stage of continued fever, except in its very malignant forms.

LECTURE LXXXIV.

TYPHUS FEVER—*Continued*.—*Second Week*.—*Synptoms*.—In *mild* cases, the patient begins to improve soon after the first week. In general, how-

ever, at the end of the first seven or eight days, the typhoid symptoms are developed. The following changes usually occur: the pulse becomes more frequent, weaker, and more compressible; the tongue, drier and browner; more and darker sordes accumulate on the teeth and lips; and, in most cases, delirium and certain eruptions present themselves. The nervous symptoms are often still the most prominent. The *headache* generally ceases; voluntary movements become very much weakened, and sometimes irregular; the patient lies on his back and *sinks down towards the foot of the bed*; he is unable to make or bear the exertion, necessary to turn on his side. If we find him, therefore, on his side, or even on his back with his knees drawn up, it is a good omen. Other proofs of debility are apt to present themselves. The voice becomes feeble or scarcely audible; the patient perhaps cannot swallow, which is a very bad sign, or is too listless to try, or the dry, parched state of his tongue and throat renders it difficult and painful to attempt it. As the mouth may have become dry from breathing through it, the patient should try to swallow a little water to moisten his tongue before you decide upon the state of that organ, or upon his facility of deglutition. Often, in bad cases especially, there are subsultus tendinum and other irregular and involuntary actions of the muscles, especially tremulous movements of the tongue and hands; sometimes the patient is unable to put out his tongue at all.

Delirium, &c.—The *delirium* is peculiar; the patient wanders, at first, in the night only, and commonly on awaking from disturbed sleep. Sometimes he desires to get up, and talks incessantly in a loud voice; but usually his rambling is of a tranquil kind; he is inattentive to what passes around him; and he lies still, muttering disjointed words. From this state of *typhomania* he may sometimes be roused by loud speaking addressed to him, or by the sight of a strange face, as that of the physician; but he soon relapses. During the delirium there is a great deficiency of sensation, and insensibility to impressions. The patient is deaf. This deafness indicates a condition of brain less perilous than morbid acuteness of hearing. Imperfection or loss of vision is much rarer and much more dangerous than deafness; yet the eye is generally dull. Sometimes, however, as the disease advances, black spots, *musce volitantes*, appear before the patient's eyes, owing likely to partial insensibility of the retina; these he tries to catch in the air, or to pick from the bed-clothes. This is *floccitatio*. The mouth and tongue are dry, yet thirst is not complained of. The taste, the smell, the sense of touch, are all impaired; even external inflammation may take place, especially about the hips and sacrum, and go on to gangrene without any complaint of pain from the patient. He seems careless about the issue of his disorder. When asked, he may say he is quite well. The involuntary passage of the feces may depend in part, especially in the advanced stage, on debility or paralysis of the sphincter muscles. The urine also dribbles away, and, therefore, the hypogastric region should be daily examined with the hand, and the urine voided should be asked to be *seen*, with the object of preventing the bladder from becoming unduly distended, and of avoiding retention of urine and all its bad consequences. The patient should be kept clean and dry to prevent sloughing ulceration.

“*The Eruption.*”—This, which is peculiar to, and distinctive of, typhus fever, commences usually from the fifth to the eighth day; sometimes later. After the third, no fresh spots appear. In this it resembles the eruptions of small-pox. It disappears in the third week. It is never papular, but consists at first of very slightly elevated, dusky pink spots, flattened and irregular, which fade into the surrounding skin, and disappear on pressure. In two or three days these spots are no longer elevated,

become darker, more defined, and *fade* only on pressure. Then, mostly, they grow paler, and finally disappear. Sometimes the spots take a dark purple centre, do not alter by pressure; or they change into petechiæ, *i. e.*, purple spots, flat, with well-defined margins, and unaffected by pressure. These occur mostly on the back, bend of the elbow, and groin. The spots of typhus are generally very numerous, and sometimes almost cover the skin, situated usually on the trunk and extremities, now and then on the face. All the spots disappear together, excepting when they show on the backs of the hands, and there they disappear in twenty-four hours. Some are paler than others, giving the surface a mottled look. This *mulberry rash* of typhus fever, before the fifteenth year, is mostly absent, or pale, or scanty, and the mortality trifling; while in those more than fifty years of age the mortality is about fifty-six per cent., and the rash is always present, and ordinarily dark and abundant.

Sometimes there are *sudamina*, connected, apparently, in this disease, with profuse sweating. These are small, hemispherical, transparent elevations of the cuticle, containing a clear, watery fluid, resembling drops of water, and having no red bases. They occur mostly on the thorax, along the sides of the neck, and about the axillæ. By degrees they shrivel up, and the cuticle dries into a whitish powder. Death is most apt to occur in the *second week*.

As death approaches, *putrid* symptoms show; a peculiar fetor from the patient; a dry, black and fissured tongue, with perhaps inability to protrude it; dark sordes covering the teeth; sloughs from pressure of the bed; the toes have mortified.

Third Period or Stage.—During the third week, the chances of recovery improve. If the patient is about to recover, he begins to attend to questions and things about him; the stupor of his countenance clears away; the temperature of his skin becomes more natural; the tongue moist and cleaner at its edge; the frequency of the pulse less; the stools less numerous, more consistent and healthy, and the patient notices their coming on; and generally the emaciation is very conspicuous, owing, perhaps, to the return of the natural expression of countenance. Often the amendment is gradual; sometimes the favorable crisis is preceded by an aggravation of most of the symptoms, and an increase of the general distress, and sometimes it is accompanied by certain evacuations, most commonly by sweating.

Modes of Death.—This disease may terminate in death in different ways. The most common mode of death is by *coma*; the muttering, half-conscious stupor by degrees becomes more profound, and death begins at the head. This mode of death, in the second or third week, is associated often with the symptoms of putrescency already described. As the stupor deepens, the pulse generally grows weak, and the extremities cold; so we have death by coma and asthenia at once, the coma taking the lead. Coma may result from pressure, or some noxious narcotic or poisonous substance in the blood. In some malign epidemics, the poison at the outset overwhelms the nervous system; the patient becomes stupid; his surface, cold, clammy, purplish; his pulse, feeble; and the coma may kill in twenty-four hours, as sometimes happens in small-pox, or oftener in scarlet fever. Death by *apnea* is frequent; it often mingles with that by coma. From the earliest period there is in most cases some increased quickness of respiration not entirely owing to the fever, or to the increased circulation, for rhonchus and sibilus are audible. Often considerable dyspnea precedes death for some hours, or for a day or two, and this may be only apparent in consequence of the stupor; or it may be real and proceed from a low degree of pneumonia, which, by interfering with the due arterialization of the blood, may aggravate or even give rise to coma. This pneumonia is apt to be masked

by fever not declaring itself by cough, the rust-colored sputa or thoracic pain; but it is detected by the hearing. Death sometimes occurs by asthenia or syncope, but is oftener combined with one or both of the two other modes of dying.

Complication.—The essence of continued fever is *not* inflammation of the brain, though there often exists incidentally inflammation of the brain or its membranes. There may be a low degree of inflammation within the head, when it is externally hot, when the cheeks are flushed, the eye vascular, and a dull headache exists. Sometimes the outward signs of encephalitis exist; severe pain in the head, high and fierce delirium, intolerance of light and sound, much heat of skin and a hard pulse. When coma succeeds these symptoms, it is owing, in part at least, to the effects of inflammation, serum beneath the arachnoid and in the ventricles, coagulable lymph, and, more rarely, suppuration. As encephalitis with pyrexia may be sometimes mistaken for continued fever with intercurrent inflammation of the brain, great judgment is required in the diagnosis and treatment.

Anatomical Characters.—The most common morbid appearance met with in the lungs after death from continued fever, is collapse, especially of the lower and posterior parts of them. The engorgement which is sometimes met with, is probably in a great measure mechanical, and takes place during the last few days of life. Besides, large parts of the lungs are found hepatized, or even purulent, and the bronchial tubes clogged by viscid frothy mucus. Sometimes the lungs are gangrenous.

TYPHOID FEVER.—The main features of this and typhus fever are the same, or very similar.

Distinction between Typhoid and Typhus Fevers.—Typhoid fever commences oftener insidiously, and, with premonitory symptoms, more gradually than typhus. The aspect of the typhoid patient, though heavy, is less dusky than that of the typhus patient; its expression is less dull and more anxious. Sometimes when delirium occurs, it is more active, and the patient is more desirous of getting out of bed.

Diarrhea is a characteristic symptom of typhoid fever. Often it is an early symptom, but sometimes it occurs at the end of the first, or beginning of the second week. It is spontaneous, or continues after purgative medicines. Abdominal pain frequently precedes or accompanies it. The stools are dark and fetid, or yellow-ochrish, like pea-soup somewhat. The abdomen on pressure is hard and tympanitic, and sometimes very much distended. Whether large or not, its convexity is from side to side, is tub-shaped, probably from flatus in the colon, ascending, transverse, and descending. Usually there is noticed in the first stage, but oftener in the more advanced stages, a slight gurgling movement from liquid and gas in the bowels, which movement is audible or palpable on pressure of the cæcal region. This symptom is not common in other diseases; it is rare in typhus fever. As the disease proceeds, from three to six or more stools occur. The stools, when involuntary, add to the patient's danger by causing irritation and sores. Much abdominal pain is seldom complained of; but pressure, especially about the cæcum, often makes the patient wince. The character of the evacuations is almost distinctive of the disease; thin, yellowish, ochry like pea-soup. When, in fever, such stools persist day after day, and several of them every day, you may safely infer that there is ulceration of the bowels, though no pain of the abdomen should be complained of even on pressure. When *hemorrhage* from the bowels, which is apt to occur in this stage of the fever, takes place, it strengthens this inference. The hemorrhage often occurs unexpectedly, sometimes in large quantities, rapidly exhausting the patient; or it recurs at intervals in smaller amounts, effectually, though more slowly wasting his strength.

The bleeding is probably owing, in general, to the subdivision or opening of some of the mesenteric veins by ulceration, though, usually, the vessels are obliterated previously to their erosion. Sometimes the blood enters the bowels, but is not voided. Hemorrhage from the bowels occurs in continued fever sometimes in connection with other putrid symptoms; petechiæ, purple spots, bruise-like blotches, and extreme vital depression. This hemorrhage is strictly passive, and a symptom of the worst omen. As in scurvy and purpura, it depends on a morbid state of the blood, which, when drawn, loses its natural tendency to coagulate, the crassamentum being large and loose, and sometimes incoherent, like sediment. This hemorrhage belongs rather to typhus fever.

Eruption of Typhoid Fever.—This is very different from that of typhus fever. It is papular; consists of little circular, bright-rose colored, slightly elevated spots, with round heads, which never become vesicular nor petechial, and which fade insensibly into the hue of the neighboring skin. These spots disappear completely under pressure. Each papula lasts about three days. Others follow. Ordinarily from six to twenty are present at one time; occasionally one only; sometimes more than a hundred. These spots begin to disappear generally in the second week, and fresh ones come out every day or two till the third week, when they cease to appear, except in case of relapse, when they may recur. These spots do not remain visible on the dead body. Flea-bites, which might be mistaken for typhoid spots, are round red stains with dark central points. The tongue is oftener moist throughout typhoid than typhus fever, and when dry more frequently red and as it were glazed. Generally, if brown at all, it is of a yellowish, instead of a blackish brown. Dr. Jenner says, "the small dry tongue, with red tip and edges, smooth, furred of a pale brownish yellow and fissured, the surface seen between the fissures being of a deep red, may be considered differentially as a diagnostic sign of typhoid fever." According to Dr. J., the average duration of fatal cases of typhoid fever is twenty-two days; of typhus, fourteen.

Mode of Death.—Death by *asthenia* occurs in the advanced periods. In it there is no pulmonary embarrassment, and the head is clear, but symptoms of debility are present; the pulse is small, thread-like, and weak; the patient lies on his back and sinks down in the bed; the features sharpen; the eyes are hollow and dim, as though glazed; the sphincters fail to contract; the extremities grow cold; cold sweats appear on different parts; finally, the heart ceases, and death follows. Death by *asthenia* happens at an *advanced* period of the disease. It is noticed sometimes in those who have been too freely depleted at the outset of the fever; or who have suffered much *diarrhea*.

Anatomical Characters, &c.—Death purely or *chiefly* by *asthenia* connects itself with morbid conditions in the belly. The main alterations found in the abdomen after death, in typhoid fever, are ulceration and other changes of the mucous glands of the intestines, especially of those of the ilium, and inflammation of the corresponding *mesenteric* glands.

ULCERATION OF THE INTESTINES.—These alterations account for the *diarrhea*; for the commonest form of hemorrhage from the bowels; for the pain, on pressure, of the abdomen, especially of the cæcum. Sometimes, however, there may be *no* pain, owing partly to the general insensibility produced by the stupor, but partly, probably, to the depth of the ulceration. The mucous tissue possesses but little sensibility; but, if the muscular and peritoneal coats be involved in the inflammation, pain is felt. The severity of the case and the intensity of the symptom are not necessarily proportionate to the number, depth, and extent of the ulcerations. This inflammatory state of the solitary and aggregate glands of the intes-

tines is not the essence of fever, nor is it a *constant*, though very frequent companion, of continued fever. This state is not necessarily fatal. It may lead to death by exhausting diarrhœa, in the way of slow asthenia; or it may lay open a large mesenteric blood-vessel, and so produce copious hemorrhage and mortal syncope; or the ulcer may perforate the bowels and peritoneum, causing fatal peritonitis. But the ulcers often *heal*. The existence of the ulcers is likely to prolong the patient's illness after the fever has left; to protract his convalescence; to hinder his recovery, and even to endanger his life by causing hemorrhage or intestinal perforation. In typhoid fever, unlike typhus, the pia mater and arachnoid are not easily separated from the convolutions of the brain. Besides, ulceration of the pharynx was discovered by Dr. J. in one-third of his fatal typhoid cases, but in not one of those from typhus. The spleen is often found altered after death by typhus or typhoid fever. It is usually enlarged, dark, soft, and sometimes of an almost rotten consistence.

LECTURE LXXXV.

RELAPSING FEVER.—*Symptoms, &c.*—This begins, for the most part, with sudden rigors, severe headache, heat and dryness of the skin, loss of appetite, and a very rapid pulse. The tongue is covered with a thick, moist, whitish fur. Epigastric tenderness, nausea, and vomiting, are common among the early symptoms. There is much aching pain of the limbs and joints. The bowels are not materially disturbed. In many cases, yellowness of the skin occurs, amounting to jaundice, with vomiting of matter like coffee-grounds, and sometimes as black as ink. Dr. Jenner never saw jaundice in typhus or typhoid fever. Circumscribed petechial spots, “minute hæmorrhagic points,” never elevated, are often observable on the skin. About the fifth, seventh, or ninth day, a copious perspiration breaks out and is followed by a sinking of the pulse to its healthy state or even below that, and by what seems rapid recovery. But from the fifth to the eighth day from this apparent convalescence, the primary symptoms return; run perhaps a shorter course than before; again terminate in sweating, and in a second convalescence, which is generally permanent. The relapse, however, happens three or even four times. The deaths, which are few, usually occur before the seventh day. In these cases, jaundice is a frequent, but not constant, symptom; the surface becomes cold and livid, the pulse very feeble and frequent, a low form of delirium arises, with drowsiness, which deepens into unconsciousness, and death results. According to Dr. Wardell, pregnant women always abort. Neither early and extreme frequency of pulse, nor sudden and great variations in it, are, of themselves, prognostic of danger. For it may amount to 150 or more, and when perspiration begins, it may drop in two or three hours to half that number. But in typhus and typhoid fever, a pulse of 130 or 140, and in typhus rapid fluctuations of the pulse, always indicate great danger.

Duration.—Typhoid is a twenty-one day fever, typhus fourteen, and relapsing a five or seven day fever.

The symptoms of these three forms of fever vary, *cæteris paribus*, according to the *season of the year* and the *situation* of the patient, according as the air is pure and cool, or foul and hot. In cold months, the risk is greater of inflammatory and especially of pectoral complications; in the autumn, of diarrhœa or dysenteric complaints. When the air is close and

foul, the symptoms tend to the low or putrid type, and the deaths are more numerous.

Exciting Cause.—Continued fever originates always in a specific animal poison, and is *contagious*. It is uncommon for a person to have genuine continued fever a second time, unless he is exposed to the contagious matter in a very concentrated state, or for a long time. It is a very interesting question, whether this disease ever proceeds from any other cause than contagion. Our own reputation, but especially the lives of others, require that we should act and advise them as though we were *sure* of the contagiousness of the disease. Many sporadic cases of fever occur, which are not continued fever, yet liable to be confounded with it. The febrile symptoms of the phlegmassiæ are much the same as those which constitute the more *inflammatory* forms of typhoid fever. Also, severe bodily injuries, as compound fractures, sometimes give rise to constitutional symptoms precisely like the most prominent phenomena of the later stages of typhus fever.

Predisposing Causes.—The belief that continued fever is *generated* by the effluvia constantly proceeding from the human body, even when healthy, if these effluvia be accumulated and condensed by the crowding together of many persons in close, dirty, and ill-ventilated places, is false. The disease, however, when once introduced, spreads, under such circumstances, with fearful rapidity. The cause of continued fever is a contagious poison, emanating from the bodies of those who have the fever. The opinion, that continued fever should be attributed to a vitiated state of the air from the putrefaction of *dead* animal and vegetable substances, is erroneous. Therefore, the dead and putrifying bodies of men and horses on the field of battle do *not* produce pestilence. The very popular notion, that fever is produced by some unknown condition of the air, imperceptible by our senses, but distinct from contagion, is gratuitous, untenable, and inconsistent with facts. Exposure to cold will not excite continued fever, though, by its debilitating effects, it will predispose the body to be affected by the contagion of fever. The same may be said of deficiency of nourishment, depression of spirits, &c. This assertion is verified by the facts, that continued fever is especially apt to attack those of the lower classes who have recently come to reside in the metropolis and among strangers, and those who belong to a defeated, dispirited, or retreating army. A predisposing cause may even be applied and operate *after* the exposure to the exciting cause, and so render the latter effective.

Precautions.—The removal at once of the sick from crowded houses to a fever hospital, and the ventilation, cleansing, and whitewashing of their impure rooms, often checks, if not entirely stops, the disease and preserves the yet healthy. For, unless pent up, the poison does not, it is probable, remain active at any great distance from the patient, not even many yards or feet. It is rarely communicated in the open air, but almost always caught in houses. It rarely extends from one bed to another in hospitals where great attention is paid to cleanliness and ventilation. Common air diminishes and finally destroys the poison; and therefore spacious and airy rooms are the best. Unless the weather be very hot, a fire should be in the room, for it acts as a ventilator. The air of the chamber should be kept fresh by having a window or door, or both, (according to the weather,) always open. Bed and window-curtains, carpets, and all superfluous furniture should be removed. The patient should be diligently kept clean by the requisite ablutions, and by frequently changing his sheets and body-linen, which should be immersed at once in water; all discharges from the patient should be instantly carried out of the room. Unnecessary intercourse with the patient should be avoided. As life advances the

susceptibility of the disease appears to diminish ; therefore the attendants should not be very young ; and all who approach the patient should avoid, as much as possible, inhaling his breath or the emanations from him. Friends, who visit the apartment at intervals only, should never enter it fasting. The chloride of lime or the nitrate of lead, or freshly burned charcoal, or of zinc, may be used as disinfecting agents *in aid* of the simple measures just mentioned ; but by no means *instead* of them. Camphor, hung in bags around the neck, is *not* prophylactic. All artificial scents are objectionable, for they tend to conceal offensive odors which might otherwise reveal the aetnal danger.

Typhus, typhoid, and relapsing fever are all contagious, but not equally so. Typhus appears to be most communicable. Relapsing fever has a strong tendency to spread. One of these species cannot generate the other ; each is produced solely by its like.

LECTURE LXXXVI.

CONTINUED FEVER—*Concluded*.—It is very difficult to estimate the value of any particular remedy or plan of treatment in this disease ; for it has a strong natural tendency to terminate in health, whether left to itself or submitted to treatment. As the abatement or cessation of *headache*, after a few days, is a natural phenomenon, we cannot infer that it yielded to a particular treatment, or was a favorable omen. Individual cases of fever, and different epidemics, often vary much in their character ; so that a plan of treatment, which was suited to one epidemic, may be improper and hurtful in another. In all these exanthemata, he is the best practitioner who knows when to abstain from acting, as well as when to act. Nor should the disease be abandoned to the *vis medicatrix naturæ* ; for during the natural course of the fever, morbid processes are apt to be set up, which, though within the scope of remedies, would, if unchecked, inflict irreparable injury upon important organs. The fever, when once established, should be conducted to a favorable close ; and the “*tendency to death be obviated*.”

Treatment.—The fever cannot be *cut short* at its outset by *emetics*, or the *cold affusion* ; for they cannot dislodge the poison from the blood. Cases that occasionally seem to be arrested by these remedies were, likely, not cases of fever, or required no treatment. Emetics, when given early, especially if gastric disturbance is a prominent symptom, are sometimes followed by marked abatement of many morbid sensations, such as the nausea, restlessness, anxiety, and furred tongue. The cold affusion fatigues and alarms the patient, and, when the vital powers are naturally feeble, or much depressed by the disease, the very shock may cause injurious consequences. Cold or tepid *sponging*, however, often greatly abates the morbid heat, and soothes the uneasy feelings. When the symptoms appear to indicate it, this sponging should be tried ; the best test of its propriety is the feelings and wishes of the patient. It is most adapted to the typhoid, and least to the typhus, form of fevers.

Bleeding.—There is no reason for thinking that inflammation *anywhere* is *essential* to this fever, but very much reason for the opposite opinion. Therefore do *not* bleed from a vein, even early, *merely* because the disease is, or appears to be, *fever*, unless there be some other manifest reason for it, *i. e.*, unless the febrile symptoms run unusually high, or unless some local inflammation is unequivocally present ; and, when you do bleed, do

not take a drop of blood more than seems absolutely necessary. Bleed your patient, therefore, if at all, in the upright posture. Some fevers may bear and require the abstraction of blood in some way or another; others may require us to abstain, when we can with safety, from taking blood at all; others, even if we take blood with one hand, to uphold the patient with the other. *Purgatives*.—The intestines should be cleared by an active aperient in the outset, and kept open by laxatives afterwards. When, however, the vital power is low, and ulceration of the intestinal glands exists, or is threatened, purgatives are not to be pressed. *Mercury*.—In some fevers in London, a *decided improvement* was almost immediately apparent upon the supervention of soreness of the mouth from mercurial, and all such patients ultimately recovered. In some forms of fever, however, mercurial is not so proper. It should be given very cautiously, if at all, in typhus fever.

Summary of Treatment.—Strictly enforce the antiphlogistic regimen; cut the hair, (which will otherwise fall out,) for it relieves the headache and confusion of thought, calms the patient, and assists the application of cold washes to the head; apply thin strips of linen, kept *constantly* wet with some cold lotion, upon the forehead and scalp, for they do good as long as they are *grateful to the patient's feelings*, i. e., as long, generally, as the head is morbidly hot. If the heat of the scalp be not more than natural, especially if the cold application makes the patient shivery or uneasy, it must be discontinued. The head and shoulders should be somewhat raised. If there are intense headache, flushed face, great heat of surface, wild delirium, and full and hard pulse, it might be right to bleed the patient from the arm while he sat up. But in these cases it is generally thought better to apply leeches to the temples, or behind the ears, or to take a few ounces of blood from the neck by cups, and at the same time to apply assiduously the cold lotion. The combination of headache with delirium makes us suspect inflammation in the brain. Dr. Jenner observes of these fevers, that "after the patient becomes delirious he never complains of headache, and rarely, even when questioned about it; while, in intra-cranial inflammation, headache is constantly and loudly complained of after delirium has begun." If the bowels have not been purged by nature or art, it is right to give three or four grains of calomel at once, and to follow this up by a senna draught. After that, in the early periods of the fever, especially if the alvine discharges are scanty, dark-colored, or otherwise unnatural, a pill of two grains of calomel, or four or five grains of hydrargyrum cum creta may be given three or four times a day. The common saline draught is generally useful and refreshing. The patient may drink toast and water or barley water as often as desired. As the disorder goes on, if the rose-colored spots declare it to be typhoid fever, and if diarrhea arise, examine the abdomen carefully. If there be much tenderness, with perhaps gurgling under gentle pressure, in the cæcal region, apply a few leeches over the tender spot, and cover the bites with a light poultice. If the diarrhea persist or run on profusely, add to the hydrargyrum cum creta some Dover's powder or extract of poppy. The extract of catechu is good. But if the fever prove to be typhus and exhibit strong and early tendency to depression of the vital power with a signal loss of muscular strength, a confused and drowsy countenance, a mottled state of the skin simulating the eruption of measles, a dark, dry, brown tongue, a feeble pulse; in these, begin very early to give a full allowance of beef-tea, and, if the symptoms of prostration become more pronounced, add full doses of ammonia, Hoffman's ether, and, better still, wine; and omit the mercury.

Under this treatment the patients often go on in a doubtful state for some days, and then begin to recover. Many, in both species of fever, especially in typhus, sleep heavily as the disorder passes slowly off.

Opiates, when judiciously used, often save the patient; but, if given inopportunely, they may puzzle the case, for you do not know how much of the coma is owing to the disease, or how much to the remedy; besides, they may lull the patient into fatal stupor. It is in that form of fever which the French call *ataxique*, where there are delirium, restlessness, *wakefulness*, spasm, and more disturbance of the nervous than of the sanguiferous system, that opium is so beneficial. The patient resembles one in *delirium tremens*. These symptoms are apt to occur in those who have had the mind overwrought and the nervous system unstrung, whether by dissipation and intemperance or anxiety. Dr. Grattan observes, with great truth, that two or three nights, spent in restless delirium, are followed by the worst consequences; and that patients who pass *three* nights in succession in that way almost invariably die. If the symptoms be well marked, it is best to give a tolerably full dose of opium in the evening; gr. $\frac{1}{3}$ of the acetate of morphia. The amendment the next day is often very striking. Unless the same symptoms recur, it is better not to *repeat* the anodyne. Wild delirium, long wakefulness, and a circulation weak and fluttering, seem to call for a considerable dose of opium. Yet, withal, there is a certain jerk in the pulse which causes us to *suspect* that the blood-vessels have something to do with the sensorial excitement. Under such circumstances, as even twenty minims of laudanum have sometimes done good, and at other times produced fatal coma, it is best to give a small dose, at intervals of an hour or two, so as to be able to stop or continue according to its effects. Many doses may be required for this purpose.

When the stress of the disorder falls on the thorax, and there is much dyspnea with the sounds that denote inflammation of the bronchial membrane or of the pulmonary substance, leeches or cups may be applied to the chest; and, in milder cases, a blister or a mustard cataplasm. Study the character of prevailing fevers and the manner of dying in the fatal cases; if it be chiefly by way of *asthenia*, that will be strong reason for caution in respect to the removal of blood, and for the early employment of beef-tea or wine, even to a very large amount, and other means of support, even brandy or the *mistura vini gallici* if required. The object is to keep the heart acting until the depressing influence of the cause of the disease shall have passed away. If the wine should flush or excite the patient, or render the pulse hard, it must be diminished in quantity, given less often, or omitted altogether. If there be indications of local inflammation, as pain in the cecal region, increased by pressure, leeches and wine may be used at the same time. The patient must be watched night and day, for the remedy that is proper one hour may do harm the next, and, besides, the delirious patient may injure himself. If the patient relishes the beef-tea or wine, that is no small warrant of the propriety of its use. Great relief may often be obtained, when the abdomen is uneasy, by applying to it a large, warm linseed-meal poultice, or the epithem called *spongior-pylina*. Often, in the latter periods of typhoid fever, even when there is no longer any detectible uneasiness of the belly on pressure, the diarrhea will persist and *meteorismus* come on. Then, a large blister over the abdomen has often very happy effects on the diarrhea and meteorismus. Very urgent and obstinate diarrhea may often be checked by opiate *enemata*. Sometimes catechu is of great use. A blister to the shaven scalp sometimes awakens the patient from profound coma.

Inquire daily about the bladder; for, owing to the stupor and indifference of the patient, it may become enormously distended, thus increasing the present hazard, and laying sometimes the foundation of kidney diseases. The urine may dribble away from fulness of the bladder. Examine, therefore, and percuss the hypogastric and cecal region at every visit.

Keep the under surface of the body dry and clean, and *look at it once or twice a day*. If the projecting points, the hips, sacrum, shoulders, elbows, become *red*, *i. e.*, are likely to slough or ulcerate, wash them with brandy. The skin, when broken, may be covered with soap plaster or *amadou* plaster. An adjustment of pillows and posture, or the water-bed, or water-cushion may sometimes be sufficient.

Perforation of the bowels by ulceration is not *always* distinctly declared in fever, owing to the insensibility; yet generally there are unmistakable symptoms of it. When it does occur, the chance of recovery is small; the best treatment is opiates to check the movements of the intestines, and a rigid adherence for some days to the horizontal posture. Careless or heavy pressure of the hand on the abdomen may cause this fearful accident in a late stage of the disease. When there is an œdema of one leg and thigh, in the advanced stage, depending on inflammation and obstruction of the femoral vein, fomentation of the limb is the only treatment required or admitted of.

Convalescence.—The *management* of this is very important, for relapses are often more perilous and difficult to remedy than the original malady. The chief danger is in getting up and using animal food and strong drinks too soon. Until the tongue is quite clean and moist and natural in color, and the pulse has lost all its undue frequency and the skin its excess of heat, the patient must be kept to broth, jellies, puddings, and farinaceous food. Then he may begin with some boiled white fish, and so gradually eat his way through chicken and a mutton-chop to his ordinary diet again.

The physician should be always vigilant, using the proper remedies at the proper time, mitigating symptoms, redressing dangerous and incidental complications, and aiding nature.

Sometimes enemata of warm water and syrup of poppies have done good. A drachm of chlorate of potass in a pint of water, as a daily drink, has assisted. Chomel fancies that the chlorate of soda is useful in addition to the general plan of treatment. Large and frequently repeated doses of quinine have sometimes signally failed to cure continued fever; sometimes they seem to succeed. The constitutional effects of quinine are giddiness, deafness, and a buzzing or some kind of tinnitus in the ear. Large and frequent doses render the pulse slower and weaker.

SMALL-POX, OR VARIOLA.—*Symptoms*.—Variola sets in with smart febrile symptoms; rigors, followed by heat and dryness of skin, a hard and frequent pulse, pain in the epigastrium, with nausea and vomiting and headache; sometimes with wild delirium, sometimes convulsions. Then, Cullen's definition says, "*Tertio die incipit, et quinto finitur, eruptio popularum phlegmonad earum, quæ spatio octo dierum, in suppuracionem et in crustas denum abeunt, sacpe cicatrices depressas, sive foveolas, in cute relinquentes.*" Fully formed small-pox is easily recognized. We suspect that a person with pyrexia has the disease, if small-pox prevail, if the patient is "unprotected," and, especially, if he has been exposed to the disease within nine, ten or fourteen days. Vomiting and pain of the back are common at the outset of variola, but not of continued fever or the other exanthemata. These, when violent, usually usher in a severe form of the disease. The same may be inferred from a continuance of the nausea and vomiting after the coming out of the eruption, which is very unusual. Heberden noticed that acute pain *in the loins* was almost always followed by a severe disorder; that pain higher up, between the shoulders, was of better augury; and that absence of pain was always reckoned a good sign. Early delirium, stupor, or convulsions, announce a severe attack; yet not always, especially in children.

The Eruption.—This almost always begins to show on the third day of

the fever; the earlier it shows, the severer, generally, is the attack. Beware that the parents of the patient do not mislead you in judging of the date of the eruption; for the spots are at first so minute as often to escape notice; besides, they often begin to come out in the night. As a rule, the eruption appears first on the face, then on the neck and wrists and trunk of the body, and lastly on the lower extremities, not ceasing to come out till the fifth day. Occasionally, the spots appear first on the extremities. Sometimes straggling papulæ continue to spring up after the main crop is completed; but they seldom arrive at the same size with the others. The pimples, or papulæ, ripen gradually into *pustules* up to the eighth day, when they generally begin to break, and crusts or scabs to form. In four or five days more, the scabs are falling off. There are some variations in all this, also. In children, the crusts are sometimes visible on the seventh day; and in adults, when the disease is severe, they sometimes do not begin till the ninth day. Pustules broken by scratching, &c., crust over early. The severity of the disease is almost always in direct relation to the *quantity of the eruption*; so also are the commotion, distress and peril which the system suffers.

Small-pox is divided into the *discrete* and *confluent* varieties. In the former, the pustules are distinct and of a regularly circumscribed circular form; in the latter, they coalesce, and their common outline becomes irregular. The former is scarcely ever dangerous; the latter always is.

Variola Discreta.—In this form the disorder runs its most natural course; the eruption is at first *papular*; the pimples begin on their third day to contain a little fluid on their summits. Then, for two days, they increase in breadth only, and in the centre of many there is a depression. On the eighth day of the disease, or the fifth of the eruption, the pustules are perfectly turgid and hemispheroidal. During the time they are thus filling up, the face swells often so much as to close the eyelids and change the features. The skin between the pustules on the face assumes a damask-red color. About the eighth day of the eruption, a dark spot appears on the top of each turgid pustule, and at that spot the cuticle breaks, a portion of the matter oozes out, and the pustule scabs. At length this crust falls off, leaving either a characteristic purplish-red stain, which very slowly fades; or an indelible depressed scar; the patient is *pitted* or pock-marked. The swelling of the face begins gradually to diminish after the eruption has become thoroughly pustular. This is the course of the eruption on the face, where it is usually thickest in both forms of the disease. The same course is pursued, only two or three days later, on the extremities where it begins later. Some of the pustules, especially on the extremities, never burst, but shrivel up. In this form, the fever generally ceases entirely upon the coming out of the eruption; the headache, the pain of the back, the vomiting, the restlessness, abate and disappear; the pulse and skin become natural. About the seventh or eighth day of the eruption, there is commonly, for a day or two, a recurrence of the fever; this is the fever of maturation. We judge of the eruption as it appears on the *face*; the variola is confluent if the pustules are confluent there, whether they be so or not elsewhere. When the pustules are just thick enough to touch each other, without absolutely coalescing, every pustule preserving its circular outline, the disease is of the *cohering* form, neither strictly confluent nor discrete.

Variola Confluent.—Pustules, confluent over the whole body, are less regular in their progress than the discrete. The eruptive fever is usually more violent and tumultuous; the disturbance of the sensorial functions is more common and more decided, the sickness more distressing, the pain in the back and loins more severe. The eruption comes out earlier and more confusedly, the pimples being at first very minute and crowded into

patches, and often accompanied by a rash like that of scarlet fever or erysipelas, thus rendering the diagnosis, as far as it depends on the appearance of the skin, for a while uncertain. It is sometimes like that of measles; but the appearance soon of fluid on the summits of the pimples, dispels the uncertainty. The pimples do not, as they advance into pustules, fill up so completely as in the distinct form; they are flatter, less plump, more irregularly depressed, and even of a different color, being first whitish, then brownish, and seldom of the yellow purulent hue of the discrete form. Sometimes they are even bluish, or purple. There is commonly some abatement of the febrile distress on the coming out of the eruption, but it is much less marked than in the discrete. About the fifth or sixth day, fresh rigors are apt to occur, marking the fever of maturation. Cullen defines the distinct form:—"Variola (discreta) pustulis paucis, discretis, circumscriptione circularibus, turgidis; febre, eruptione factâ, protinus cessante." He defines the confluent:—"Variola (confluens) pustulis numerosis, confluentibus, circumscriptione irregularibus, flaccidis, parum elevatis; febre post eruptionem perstante." The *secondary fever*, which is slight in the distinct form, but generally very intense and perilous in the confluent, sets in about the eleventh day of the disease, or the eighth of the eruption, just when the maturation of the pustules is complete, and they begin to desiccate.

Periods and Modes of Death.—The eighth is the most perilous *day*; the second the most perilous *week*. Early death denotes peculiar *malignancy* in the disease. The poison appears to overwhelm the nervous system. During the second week, the disorder proves fatal chiefly in the way of apnea, from some affection of the perspiratory passages. After that period, the characters of asthenia usually predominate; some complication, or so much irritation of the surface and so large an amount of suppuration gradually wearing out the patient.

LECTURE LXXXVII.

SMALL-POX—Continued.—*Symptoms.*—In both kinds of small-pox there is *sore throat*, depending often, in a great measure, on pustules there and in the mouth—the tonsils and fauces are tumid and red. There is also, about the time the face swells, sometimes in the discrete form, and almost always in the confluent, *salivation* for several days; the discharge at first is thin and plentiful, but, towards the period of maturation, often viscid and ropy, and hard to be got rid of. If it cease abruptly, especially if, at the same time, the swelling of the face suddenly and prematurely subsides, the peril is great. This salivation does not so often occur in children; but diarrhea appears sometimes to take its place. It is not likely that the small-pox contagion ever causes variolar sine variolis. The idea that the pustules occur in internal parts, especially on the intestinal mucous membrane, is probably false. The enlarged solitary follicles there situated often resemble pustules. Dr. Gregory states that pustules do not form on the conjunctiva, and that blindness of one or both eyes, so common, especially in children, is produced by intense ophthalmia, which sets in at the period of the secondary fever. During the period of maturation, a peculiar greasy, disagreeable, diagnostic odor proceeds from the body. About the same time there is often a tormenting itching of the surface; scratching often ensures *pits*.

Complications, &c.—In severe confluent cases, during the secondary fever,

the patients are liable to erysipelatous inflammation, tending to form abscesses; to glandular swellings in the groin and axillæ, which sometimes suppurate; to sloughing sores on the hips and sacrum; to phlebitis; to most serious dyspnea, viscid mucus clogging the air-passages, especially the larynx, interfering with the arterialization of the blood and threatening suffocation. Occasionally, œdema of the glottis suddenly destroys life. In one most fearful phase, symptoms of the putrid diathesis appear; petechiæ, vibices, hemorrhages from various parts. The pustules, instead of being plump and yellow, are flat, red, purple, or blue, containing blood, or sanious ichor, instead of pus, and constituting *bloody* small-pox. These are believed to be fatal signs. Uterine hemorrhage is common; and, in pregnancy, abortion, and then, commonly, death. The fœtus in utero is sometimes, but rarely, infected with variola; likely, it may pass through the disease in utero, and so be protected from a future attack. No contagion is so strong and sure as that of small-pox; none operates at so great a distance. It is communicated by inoculation, by breathing, by the contact or vicinity of fomites, by the dead body, even without contact.

Inoculation.—In many of the pustules, when about five or six days old, a circle of yellow puriform matter surrounds a central whitish disc or *vesicle*, the lymph in which is, most probably, the purest part of the variolous poison. Inoculation, *i. e.*, the insertion beneath the cuticle of a minute quantity of the variolous matter, begets a much milder form of variola than that contracted “in the natural way;” but an inoculated person may impart the contagion to others. The mortality in the natural small-pox has been estimated at one in five; that after inoculation, at one in five hundred cases. In inoculation, the period of incubation is comparatively short, the pustules seldom numerous, still more seldom confluent, and the secondary fever generally slight or wanting. A rash, (*roseola variolosa*,) something like that of scarlet fever, often precedes the eruption. It fades in a day or two, and then the small-pox pustules emerge. The rash happens oftener in the inoculated than in the casual disease. In the former, it is thought rather a favorable sign; in the latter, especially if of a dark-red color, the herald of a severe confluent disorder. Inoculation with matter from a fully matured pustule, does not so surely excite the disease, as that from a more erud one.

Vaccination.—On the second or third day after vaccination, the punctures look red and inflamed; on the fourth or fifth, a vesicle appears containing a thin transparent liquid, and depressed at its centre; on the eighth, the vesicle measures from a quarter to half an inch across. From the seventh, eighth or beginning of the ninth day, the inflammation around the vesicle increases during the ninth and tenth days, forming the *areolar*, which begins to fade on the eleventh, leaving some hardness for two or three days. The brown crust which by this time has formed, becomes harder and darker and falls off about the twentieth day, leaving a cicatrix less than an inch broad, circular, slightly depressed, with radiating lines, and pitted. About the eighth day, some slight temporary febrile excitement usually comes on, which is analogous to the secondary fever of small-pox, and appears to furnish the condition of the desired protection. To determine whether the cow-pox has run its proper course or not, vaccinate the other arm, or another part four or five days after the first vaccination. If the first operation has been effective, the inflammation of the second vesicle will overtake and proceed with the first, its vesicle and areolar however being smaller; if not, the second will run its own course and should be tested by a third.

VARIOLOID.—Occasionally a vaccinated person catches small-pox, which

is much milder and shorter than even the inoculated, is seldom fatal, and is called *varioid* or *modified* small-pox.

Symptoms.—The constitutional symptoms of this form are, generally, at the outset and for several days, those of regular small-pox, there being the same fever, often much headache and sickness, and sometimes delirium. The eruption begins about the third day, is often copious and sometimes confluent, and in the confluent cases the eruptive fever does not entirely subside as soon as the crop of pimples has come out. But in the subsequent progress of the disease, the appearances of the skin, and the constitutional symptoms are modified. Sometimes the eruption very nearly resembles that of ordinary small-pox; the pustules fill up, have the central depression, crust over, and the face swells, but this *course is shorter*, and the pustules usually smaller than in the ordinary disease: this is the severest and least common form. Sometimes the papulæ show fluid on their tops, but never fairly suppurate nor break, but the vesicles dry up with livid bases and horny summits. Sometimes, again, much of the eruption consists of red pimples, which soon become livid but contain no fluid. In most cases, all these forms of eruptions coexist. In modified small-pox, secondary fever is totally absent; the patient is convalescent just when, in regular small-pox, his danger is beginning to be most urgent.

Re-vaccination, &c.—As, sometimes at least, the protecting influence of cow-pox upon man diminishes in time and at length wears out, therefore re-vaccinating is advisable. Vaccination should not be delayed beyond the third or fourth month after birth. It seems likely that the vaccine virus loses its protective qualities by being repeatedly transmitted from person to person. Mr. Marson believes that “vaccinations may be relied on as protective, when four or more vesicles have left good dotted cicatrices.” Lymph for use is in its best state on the seventh day of the vesicle it is taken from—the day week from the vaccination. It should be taken when the vesicles are plump, and just before the formation of the areola. It should never be taken later than twenty-four hours after the areola has begun to form. It is impossible to have a lancet too sharp. The lymph should be introduced by five punctures of a valvular shape, from half to three-fourths of an inch apart, from above downward, and so managed that the lymph may gravitate into the wound. The lancet need not be recharged. The wounds should not be bruised.

Treatment.—The employment of the hot and stimulating regimen to promote a copious eruption is eminently disastrous. Daniel Sutton exposed his inoculated patients much and often to a cool atmosphere, supplying them freely with refrigerant drinks, and keeping them on spare diet. The same principle applies to the casual disease, when impending, or treated at its commencement. The object is to prevent a copious eruption, on which the severity and peril of the disorder entirely depend. Blood-letting does not lessen the number of the forthcoming pustules; besides, if the eruption be confluent, suppuration will be extensive, and a certain degree of strength will be required to assist recovery. Saline purgatives to produce two or three loose stools daily, and free ventilation of the surface of the body, may abate the force of the eruptive fever and keep down, it is believed, the number of pustules. The skin, if very hot, may be sponged with tepid water. If the pimples on the face, when all out, be very few and distinct, the danger is over and there is no more to be done—further purgatives may be hurtful. But if the pimples on the face be many and confluent, the patient still requires much attention—look out for, and meet, untoward symptoms. In small-pox, as in continued fever, opiates are the remedies for wakefulness and restlessness, which, with tremors sometimes, are apt to come on about the eighth or ninth day.

In variola, full doses at bed-time often show good effects the next day. If the pustules mature tardily, not filling up properly, nor becoming purulent, strong broths, even wine, may be used carefully; watch their effects, and adjust their amount to the necessities of the case. When the pustules are livid and intermixed with petechiæ and putrid symptoms occur, the disorder is generally fatal. In such cases it is customary to prescribe bark and acids in addition to the wine and opiates. During the secondary fever, keep the bowels moderately open by gentle laxatives or enemata, and give opiates once or twice daily. These are the more necessary on account of the irritation of the skin. Now give up the cooling regimen, and support the strength by nourishing diet; wine and cordials, if the pulse be feeble—the swelling often makes it difficult to feel the pulse.

Local Treatment.—To relieve the intolerable itching, cold cream is used; or a solution of common salt, applied lukewarm; or a lotion made by mixing 3i of *liquor sodæ chlorinatæ* with O ss of water; or a liniment of equal parts of olive oil and lime water. This may be smeared occasionally over the itching surface with a soft camel's-hair pencil. To prevent pitting of the face, Mr. George dusts it with finely-powdered camphor; Mr. Startin touches the apex of each pustule with the *acetum cantharidis* by means of a camel's-hair pencil; Mr. Higginbottom touches each distinct papulæ with the solid stick of lunar caustic previously moistened, but when the spots are confluent, he washes the whole face, about the third day of the eruption, with a very strong solution of the nitrate of silver; ʒ viii to ʒ i of water. Dr. P. Howard uses ʒ i to ʒ i of water. This used from time to time, allays the heat, itching, tension of the face and scalp, and abates the cutaneous inflammation. It gives no pain; and as it requires no skill in its use, it may be intrusted to the nurse. For the dyspnea which sometimes comes on late, blistering the throat and chest may answer.

LECTURE LXXXVIII.

CHICKEN-POX, *Varicella, Crystalli, Variolæ Pusillæ, Varicella Lymphatica*, is a very unimportant complaint; it springs from a specific poison distinct from that of small-pox; is almost peculiar to infants, and children of tender years, rarely occurring in adults; it runs a definite course; occurs but once; and affords no protection against small-pox, nor interferes with vaccination; while small-pox or vaccination affords no protection against it; it spreads by contagion, but is not communicable by inoculation. The eruption is preceded by little or no premonitory fever, and commences usually on the shoulders, neck, and breast, affecting almost always the scalp, but sparing very much the face—which small-pox never does. It is composed, from the very first, of perfectly transparent and usually numerous, but distinct vesicles surrounded by very slight superficial redness. Crops of vesicles appear in succession for two or three days; while new ones are forming, the first begin to shrivel. The vesicles that remain after the second or third day become slightly opaque and like pearls. Friction sometimes causes them to inflame and be converted into pustules. The scabs are small and gummy, dry quickly and crumble off, leaving occasionally shallow cicatrices. During the short progress of this disease, there is no constitutional disturbance of any consequence. In equivocal cases of eruption, take precautions to prevent the extension of the disease.

Treatment.—This is the same as that recommended for the mildest cases of discrete small-pox.

MEASLES—*Rubeola Morbilli*.—This is communicable from person to person, and generally occurs but once.

Symptoms.—The introductory fever is sometimes severe. It begins with lassitude and shivering, followed soon by heat of skin, acceleration of pulse, anorexia, and thirst. The mucous membranes, especially of the air-passages, are inflamed. The eyes become vascular and watery; the eyelids, heavy, turgid, and red; the lining of the nasal cavities, fauces, larynx, trachea and bronchial tubes is affected; hence the sneezing, lachrymation, the copious defluxion from the nostrils, the sore throat, the redness of the fauces, and commonly the dry, hoarse, peculiar cough,—in short, the symptoms of coryza and catarrh, which usher in measles. Sometimes there is diarrhea, and often vomiting, which ceases when the eruption comes out. The eruption appears, as a rule, on the fourth day; seldom earlier, often later; sometimes as late as the eighth or tenth day from the beginning of the catarrh. It is a rash of, at first, minute papulæ, which, multiplying, coalesce into blotches of a more or less horse-shoe or crescentic shape, with intermediate skin of natural color. It is two or three days in coming out, beginning on the face, neck, and arms, then reaching the trunk, and then the lower extremities: in this course it resembles small-pox. It fades, becoming browner, in the same order, having stood out three days at least on the face; so its whole duration is six or seven days. It is slightly elevated, especially on the face, which is somewhat bloated and swollen. The cuticle does not peel off in large flakes, as it often does in scarlet fever, but a great part crumbles away. Occasionally a few small short-lived vesicles intermix with the rash. The fever of measles, unlike that of small-pox, does not cease, nor abate, upon the emergence of the eruption; but sometimes increases in intensity. Measles, unlike small-pox, is not more severe, nor more dangerous, because the eruption is plentiful or early; indeed, the contrary is sometimes the case.

When the rash happens without the fever and catarrh, the disease is called *rubeola sine catarrho*. This form confers no protection against regular measles, which commonly comes on in a few days. The period of incubation of measles is from ten to fourteen days. It is propagable by inoculation, which, however, does not render it milder. It is sometimes epidemic, sometimes sporadic. The general character of the symptoms varies much in different epidemics.

PUTRID MEASLES.—Sir Wm. Watson has described a form called *putrid* measles. The eruption appeared unusually early, so early as the second day; besides cough and dyspnea, there were extreme debility and dysenteric diarrhea, more seeming to die of the intestinal affection than of the pectoral; gangrene often occurred both internally and externally. In this low form, the rash is often irregularly and imperfectly developed and livid.

Diagnosis.—In the outset of the fever you may guess what is coming on by the coryza, catarrh and hoarse cough; especially if the disease be about. On the very first day of the eruption of measles, the small, red and separate spots are very like the incipient pimples of small-pox; but presently the latter exhibit some fluid, while the former do not. Yet, occasionally, a few miliary vesicles mix themselves with the eruption of measles, but make no advance in twenty-four hours. Under the head of *Scarlet Fever* are pointed out the distinction between it and measles.

Prognosis.—This depends chiefly on the mildness or severity of the pectoral symptoms; the most common cause of death being inflammation of one or more of the textures of the lungs. Measles often leaves chronic pulmonary mischief behind. In scrofulous children and the young, it often awakens the germs of phthisis. It is apt to inflict a blow on the constitution of adults, which renders them valetudinarians for life. The

prognosis is always unfavorable when the eruption does not stand out well, is livid and accompanied with purid symptoms, or a disposition to gangrene. It is favorable when the thoracic symptoms are not severe; when the fever moderates on the coming out of the rash; and when the rash is steadily persistent, and there is no excessive prostration of strength. Measles is seen principally in children, but sometimes in adults.

Treatment.—Slight cases require little more than judicious domestic attention. Cold air to the surface is unsafe, on account of the pectoral symptoms. Therefore, keep the patient in bed, with the clothes and warmth of the apartment to which he is used in health; adopt the antiphlogistic regimen; if the bowels are not open, give gentle laxatives. Some diaphoretic may be ordered: as a draught containing of *liquor ammonie acetatis*, ℥ ii or iii; of *spiritus etheris nitrici*, ℥ ss, and of camphor julep, ℥ i; to be taken three or four times in twenty-four hours. Closely watch the pulmonary symptoms. These at first almost always depend on bronchitis, which is apt to insidiously become pneumonia. Extensive bronchitis is what we have for the most part to dread. Treat as in *bronchitis* and *pneumonia*. Take blood from the arm or chest, apply a blister, and give tartar-emetic. The depletion should be resorted to *early*. When the rash is about to decline, a spontaneous diarrhea often sets in, and appears to abate the febrile symptoms. If it fail to occur, give gentle aperients. Blisters on weakly children are apt to cause troublesome and gangrenous sores. Sometimes this inconvenience may be prevented, either by interposing a piece of silver-paper between the blister and the skin, or by leaving the blister on the part three or four hours only, and applying a poultice which raises the cuticle. If the eruption disappear prematurely, it may sometimes be restored by a warm bath. Counteract any low state of the patient, especially putrid symptoms, by wine and animal broths—cautiously watch their effects. After recovery, the patient should wear warm clothing, should not go out too early, or expose himself to cold, otherwise pneumonic inflammation and dysenteric purging will often result.

SCARLET FEVER.—This is a contagious febrile disease, attended almost always by rash and *sore throat*, and seldom occurs a second time. *The throat and skin affection* may both be well marked, or only one. The malignant sore throat may be caught from one who has mild scarlet fever, and *vice versa*.

Varieties.—Scarlatina is divided into: 1. *Scarlatina simplex*, in which there is a florid rash, and little or no affection of the throat; 2. *Scarlatina anginosa*, in which both the skin and throat are decidedly implicated; 3. *Scarlatina maligna*, in which the stress of the disease falls on the throat. To these, Dr. Copland adds a fourth, *scarlatina latens*. In this, certain well-known and remarkable sequelæ of scarlet fever are manifested in persons who had been exposed to the disease, but in whom its primary and diagnostic symptoms had not occurred, or were so slight as to escape notice. Scarlet fever is a disease of children, and is more dangerous than measles.

Distinction between Rubcola and Scarlatina.—In rubeola, at the outset, catarrhal symptoms, sneezing, cough, defluxion from the eyes and nose, precede the rash; in scarlatina, they do not. In rubeola, severe inflammation and ulceration of the throat are absent; in severe cases, at least, of scarlet fever they always exist. In measles, the rash is more elevated and darker, of the raspberry tint, and the papulæ collect into semi-lunar clusters, with intervening healthy skin; in scarlatina, the tint is that of a boiled lobster, commencing in minute points on the face and neck, and breast, and soon becoming universal, being generally deeper about the

groins and joints. On the arms and legs, the eruption is occasionally more spotty, papular, and prominent. In measles, the rash appears on the fourth day of the disease; in scarlet fever, on the second.

The Rash.—This generally begins to come out on the second day. Sometimes in scarlet fever (probably in some epidemics) little transparent vesicles, like *sudamina*, closely stud the red surface, especially of the thorax and front and sides of the neck. The liquid is soon reabsorbed, and the cuticle comes off in a thick white scurf. The eruption, in favorable cases, stands out three or four days, and, in most cases, gradually disappears before the end of the seventh day. Then the cuticle begins to desquamate in small scurfs or scales from the face and body, but in large flakes often from the extremities, and sometimes entire from the hands and feet. In scarlatina *maligna*, the rash is apt to come out late and imperfectly, and sometimes not at all; to be bluish or livid; to be occasionally diversified by purple spots. Sometimes it suddenly recedes, and perhaps reappears.

Between *roscola*, which is an eruption attended with inflammation of the throat, and scarlatina, it is perhaps impossible at first to discriminate. *Roscola*, however, is not contagious, comes and goes, has no definite course, and is more chronic than scarlatina, and, perhaps, attacks the extremities *first*.

Symptoms.—The tongue, in scarlatina *simplex* and *anginosa*, is often covered, at the outset, with a thick white cream-like fur; its edges are bright red, and red exaggerated papillæ project through the fur. These red points gradually multiply, and finally the whole tongue becomes unnaturally red, clean, rough, and raw-looking; and sometimes, in bad cases, it gets dry, hard, and brown. Sore throat, with some stiffness of the neck, is usually the first thing complained of; the tonsils are swelled, and the fauces and a large part of the palate are red, sometimes of a dark claret color. Soon whitish exudations, or gray aphthous crusts, or, perhaps, sloughy ulcers left by the separated crusts, cover irregularly the tonsils and velum. In malignant cases, the eruption, if it appear at all, is livid and partial, fades early, and is attended with a feeble pulse, cold skin, and extreme prostration of strength. Sometimes life is extinguished in a few hours. In other cases of scarlatina *maligna*, the typhus-like symptoms rapidly deepen; and death, in children, is apt to occur on the fifth day, often as soon as the third. The pulse becomes frequent and feeble; the tongue, dry, brown, and tremulous; the debility, extreme; the throat is livid, swollen, ulcerated, and gangrenous, and the respiration impeded by viscid mucus about the fauces. Over this, medicine has little control. The chance is much greater in scarlatina *anginosa*, when the eruption is florid and stands well out. Still here the sources of danger and death are various. Many die apparently from inflammation or effusion within the head; they have violent headache, with furious delirium followed by coma and death. As the disease proceeds, although the rash may be persistent, the throat becomes foul and sloughy; an acrid discharge from the nostrils, which are so stuffed and swollen internally that the patient can scarcely breathe through them, runs over and frets the upper lip; the parotid and submaxillary glands swell, sometimes enormously; and fever is lighted up afresh. In this way many cases prove fatal in the second week. The cervical swelling causes constriction of the fauces and stiffness of the neck, and sometimes, doubtless by interfering with the free return of the blood through the jugular veins, produce a tendency to coma. There are often purging and an excoriated anus. The running from the nose, the smarting diarrhea, the swelling of the parotid and other glands, result from the absorption of the poisonous

matter from the ulcerated throat. The throat, in these cases, gives rise to the most formidable symptoms. When the glands at the angle of, and beneath, the jaw are much enlarged in a child in scarlet fever, it is a bad sign. Sometimes the mischief extends into the larynx, so destroying life; this event is probably rare. Often the inflammation invades the Eustachian tube, sometimes causing permanent deafness by closing the tube, or by destroying the *membrana tympani* and the little bones. Scarlet fever sometimes befalls parturient women, and then it almost always proves fatal.

Sequelæ.—Children, after a severe attack of scarlet fever, are liable to fall into a state of permanent bad health; are liable to boils, strumous ulcers, diseases of the scalp, sores behind the ears, serofulous swellings of the cervical glands and upper lip, chronic inflammation of the eyes and lids. These results are also very common after small-pox and measles. Other sequelæ are pain and swelling of the larger joints, resembling sub-acute rheumatism, but eased by friction; and most commonly *anasarca*, often with dropsy of the larger serous cavities. This is a *febrile* dropsy, and is, in most cases, a formidable complaint. Dropsy is most apt to occur in those who have had much desquamation and in such as are early exposed to the open air, viz., such as, having suffered a mild attack, do not take care of themselves; it is most frequent in winter. When desquamation is over, and the new surface is somewhat hardened, the peril is past. Dr. Wells observed that the dropsical symptoms commonly showed on the twenty-second or third day after the commencement of the preceding fever; occasionally as early as the sixteenth and as late as the twenty-fifth; and that, after the fourth week, dropsy was not to be dreaded. This *anasarca* occurs in children and the young; it may occur in adults. In this, as in other febrile dropsies, the urine is very dark, olive-colored, albuminous, and sometimes bloody, and contains fibrinous casts of the renal tubules. Chronic renal dropsy and Bright's disease have originated in this acute *anasarca*. In this febrile dropsy, inflammation, especially of the serous membranes, with its effects, is common, but it has no essential connection with common inflammation of any part, unless the state of the kidney be of that kind; for neither redness, nor any of the products or events of inflammation are found after death.

Premonitory Symptoms of the Dropsy.—This disease is usually preceded, for a day or two or longer, by languor and peevishness; often, by nausea and vomiting and costive bowels. The pulse, in the outset, has been found slow and irregular, but afterwards becomes frequent; the urine, at first, is scanty and altered in appearance; the face becomes pale and chuffy. Sometimes, as the disease proceeds, violent headache, drowsiness, dilatation of the pupil, convulsions, or palsy denote effusion within the head. These symptoms may result from poisoned blood. Much oftener the dropsical accumulation is in the *plenræ*, and dyspnea is prominent. Any considerable ascites is rare.

The contagion of scarlatina is active, uncertain, subtle, and tenacious, clinging to an apartment, to furniture, and clothes, for a very long time, even after careful purification; but the variolous poison is soon destroyed by fresh air. It is not known at what period the danger of imparting the disease, or of catching it, is past. Dr. Webster thinks the risk of infection is diminished by frequent spongings of the patient's body with tepid vinegar and water.

Treatment.—In *scarlatina simplex*, keep the patient in the house; regulate his bowels, and observe the antiphlogistic regimen in regard to diet.

In *scarlatina anginosa*, if the heat of the surface be very great and distressing, the cold effusion is not to be recommended; cold or tepid sponging is very refreshing and good. If delirium comes on, the scalp might

be shaved and cold applied to it; and, if the pulse is hard and strong, some blood may be taken by leeches, applied behind the ears rather than to the temples, for they relieve the throat and the head also. If the fever is extreme and the delirium violent, blood might be taken cautiously from the arm, while the patient is sitting up, the effect being carefully watched. When these untoward head symptoms are absent, keep the bowels open by moderate laxatives. Saline draughts are grateful and cooling, as the citrate of ammonia; if the pulse be without hardness and feeble, an excess of the carbonate of ammonia might be ordered, so that four or five grains of it in each dose may remain unsaturated by the lemon juice. Do not interfere unnecessarily; take blood cautiously, if necessary, and watch and obviate the dangerous effects of the poison in the system.

In *scarlatina maligna*, all our care will often be in vain. The patients sink, often at a very early period, with but little affection of the throat or skin, the poison overwhelming, especially the nervous system. The liberal use of wine and bark to sustain the powers till the deadly agency of the poison somewhat passes by, is the only remedy. There is danger that gangrenous ulceration in the fauces may re-inoculate the system with the poison. Quina, especially wine, are to be diligently though watchfully given. Gargles may be used to correct the state of the throat, and to prevent its distressing and perilous consequences; as a weak solution of the chloride of soda, or, better still, a solution of nitrate of silver. In children who cannot gargle, this solution may be injected into the nostrils and against the fauces. By this means a quantity of offensive, sloughy matter is sometimes brought away; the acrid discharge is made harmless; the running from the nose and diarrhea cease, and the disease then approximates to *scarlatina anginosa*. This is a great improvement on the old epsium gargles. A pint or a pint and a half daily of a solution of the chlorate of potass, in water (3 i to O i) may be given as a *drink* in scarlet fever and in typhus fever. Under its use, the furred, or brown and dry tongue often becomes cleaner and moist. Chlorine itself has been much praised in the severest forms of scarlet fever, owing, perhaps, partly to its disinfecting properties, and its neutralizing the foul secretions. This is the formula for its preparation: Put grs. viii of pulverized chlorate of potass into a pint bottle, and pour upon them 3 i of strong hydrochloric acid. Keep the bottle corked until the violent action ceases; then add 3 i of water and shake well; then another ounce of water, and again shake well; and so on till the bottle is full. In cold weather the bottle should first be warmed. A tablespoonful or two of this mixture, according to the patient's age, may be given for a dose, frequently. An adult may take the whole pint in the day. Do not, by any means, allow the bowels to remain costive. An experienced physician thought that blisters applied *early* to the neck and throat rendered the affection of the fauces mild.

During convalescence, to prevent dropsical symptoms, the patient should carefully avoid all exposure to cold and wet and fatigue; he should not go out of the house till the process of desquamation is fairly over, or even till some little time *after* this. If very slight dropsical symptoms *do* occur, purgatives and digitalis generally remove them. A combination of the muriated tincture of iron with the tincture of foxglove is advisable. Diaphoretics are useful; as the *warm bath*, which may be repeated every night. As the kidneys are congested, a small quantity of blood may be taken from their neighborhood by leeches or cups. For the same reason, stimulating diuretics should not be employed. But if there be any *inflammatory* disease within, we must employ blood-letting, purgatives, and mercury, to arrest the inflammation, to promote the removal of the effused fluid, which, especially if effused suddenly, may fatally oppress vital organs. *Bella-donna* is not a prophylaxis in this disease.

LECTURE LXXXIX.

THE PLAGUE.—This is a very malignant kind of contagious fever. It is, at times, epidemic; is attended with buboes and carbuncles, and is, apparently, contracted more than once.

ERYSIPELAS, ST. ANTHONY'S FIRE, THE ROSE.—This term should be restricted to that disease *alone* in which the integument of the face and head become diffusely inflamed. It is idiopathic, runs a tolerably regular and definite course, is attended by an *eruption*, is often *epidemic* and communicable from person to person; but it less certainly protects the constitution from its own recurrence.

Symptoms.—The fever *precedes* the local inflammation, and sore throat is early and almost constantly present. The patient feels ill, shivery, feeble, languid, and often drowsy. The attack generally sets in with distinct rigors, and the pulse is often very frequent. Very commonly there are nausea and vomiting, and often diarrhea. Then some part of the face, usually one side of the *nose*, or one *cheek*, or the rim of one of the *ears*, begins to feel hot, stiff, and tingling, and is of a deep red color, swelled, and hard. The redness and swelling are defined by a distinct elevated margin, which gradually, sometimes rapidly, extends over healthy surfaces, until the inflammation occupies the whole face, or scalp, or both. The lips swell enormously, the cheeks enlarge, and the oedematous lids seal up the eyes. Sometimes the neck and shoulders become implicated. Sometimes, as in scalds, the inflamed surface becomes covered with irregular bullæ, or blisters; but often there is *no* vesication. Often the inflammation is superficial; sometimes it affects the subcutaneous areolar tissue, which is apt to suppurate, and even slough. In three or four days, the redness fades, the swelling subsides, and desquamation ensues; the face becoming pale and covered with patches of dead cuticle, while the scalp, or upper part of the neck is becoming red from the spreading inflammation. Sometimes *crusts* cover the parts where blisters had formed. Redness and soreness of the *throat* almost always exist though not always complained of. The intensity and complication of the symptoms vary much. Sometimes the sufferer lies still, yet apparently conscious, till the tumefaction diminishes, and he can open his eyes again. Generally, there is some wandering of the mind, especially at night; and, in bad cases, there is much delirium, and, at length, complete coma, and death in a few days.

Pathology, Modes of Death, &c.—In some cases, the inflammation has extended to the encephalon; in others, probably, the functions of the brain have been disturbed through the febrile derangement of the circulation. After death, serous fluid is usually found beneath the arachnoid and in the cerebral ventricles, and the veins of the pia mater are turgid. It is doubted whether such appearances are always to be attributed to inflammation. Sometimes no morbid appearances are found in the skull. Metastasis to internal parts, even to the brain, is presumed to be rare. But the *extension* of the disease, the supervention of delirium and coma, while the external inflammation *continues*, is of common occurrence. Death often occurs with effusion within the head and *coma*. Sometimes the patient dies suddenly, unexpectedly, of *apnea*, and then (sometimes at least) the submucous tissue of the glottis and epiglottis is found filled with serum. Sometimes death occurs by gradual *asthenia*. Without any stupor, or much wandering, or any marked affection of the breath, the pulse gets weaker, the surface cold, and the heart at length ceases to pulsate.

Causes of Erysipelas.—These are various, and often obscure. Other causes, besides contagion, are: cold, irregularity of diet, violent mental emotions, anger, fear, purulent infection of the blood, local injury. When erysipelas is *epidemic*, its occurrence is promoted by any thing that tends to debilitate the body; intemperance, previous disease, low spirits, anxiety, insufficient nourishment, and foul air.

Treatment.—Neither the treatment of inflammation, especially blood-letting, nor the early and liberal use of urine and bark is universally proper or safe; yet each of these modes is the best under certain circumstances. This disease will run a certain course, and will *generally* terminate sooner or later by resolution, whether remedies be employed or not; still these must be used to conduct it safely to its termination. Experience is in favor of giving support, and of abstaining, as much as possible, from taking blood. At the outset, if there be a hard and frequent pulse, much headache, and active delirium, either bleed from the arm, and then cautiously, and in the upright posture, or cup the neck, or apply leeches behind the ears. In all cases, purge briskly at the commencement; a full dose of neutral salts, or of rhubarb and magnesia, is better than calomel and senna. If, very early, there be any nausea or oppression of the stomach, an emetic will be proper. In most cases, evidences of great debility soon appear; a feeble and frequent pulse, tremors, often a dry and brown tongue: these increase if you *then* persist in drawing blood. Here the carbonate of ammonia sometimes does great good; also animal broths and wine. Bad cases are apt to baffle us all. Perhaps not one patient in a hundred should be bled from the arm.

Drs. Fordyce, Wells, Heberden, recommend the treatment by bark, *i. e.*, sulphate of quina. Dr. Jackson, an American physician, says that, after a purge and, if necessary, an emetic, the sulphate of quina should be given in as large doses as the patient will bear; that from grs. xii to xxv in twenty-four hours will generally suffice; and that a buzzing in the ears denotes when the dose is sufficient. Dr. Elliotson says he never saw quina do harm, even in active tonic erysipelas; and that when you hesitate between the antiphlogistic and stimulating plans, the quina is *always* safe and *eligible*. Dr. Williams, of St. Thomas's Hospital, thinks better of *wine*, which he gives in *all* cases, *from the very beginning*. In young, strong, country persons, bleeding may be requisite. Many patients are saved by judicious management; many do well with but little care or medical interference; many, but fewer, die under any treatment. Perilous cases should be perpetually watched and carefully nursed; for the indications of treatment may alter from hour to hour.

After clearing out the alimentary canal, do not be active in either way, unless plainly indicated. If the pulse becomes weaker, and there is doubt about the propriety of stimulating, you may give grs. v or vi of the carbonate of ammonia every four hours, and beef-tea. If the powers still continue to sink, order wine, or both bark and wine, but especially the latter. If, however, there is much headache, a hard pulse, and great febrile distress, you might apply a few leeches, and prescribe tartarized antimony in a saline draught. The bowels should not be allowed to become confined—mild aperients are better than the drastic. Muriated tincture of iron has been very highly recommended. It might be used when there is no great cerebral disturbance, in doses of from ten to twenty minims every two hours.

External Treatment.—The following have been recommended: Putting leeches upon the inflamed part; puncturing it with needles or lancets; covering or surrounding it with blister or with the lunar caustic, in substance or in strong solution; dusting the surface with magnesia or flour;

smearing it with various unguents, particularly mercurial ointment; keeping it wet with some cold lotion; or fomenting it with hot flannels. The most useful and comfortable is fomentation by flannels wrung out of a hot decoction of poppy-heads, which should be used *continually*, as long as it is grateful to the patient. Flour dusted over the surface cools, soothes, and comforts the patient.

Surgical erysipelas occurs often on other parts, especially on the extremities, and occasionally on the trunk, and travels sometimes to the head. This inflammation is mostly the result of some local injury, of punctured wounds, of the sting of insects, or the bites of venomous reptiles, of mere scratches; or it spreads from old sores, or supervenes on dropsical limbs. It is apt to spread by contagion, and to be epidemic; it is liable to be attended with gangrene; with inflammation of the subcutaneous areolar tissue, and with suppuration; and to require incision to relieve tension and let out the pus or sloughy dead areolar tissue.

ERYTHEMA.—This is a superficial redness of some part of the skin, unattended by inflammation of the subcutaneous areolar texture by vesication or, generally, by fever; it is not peculiar to the face and head. One of the many varieties of this is erythema *nodosum*. This occurs most frequently in young women; sometimes in feeble boys. Commonly indisposition and some slight fever precede the eruption for a few days. Then, red elevated spots, forming oval patches, an inch and a half long and an inch broad, perhaps, come out on the forepart of the legs, and but rarely on the arms, having their long diameters parallel to the axis of the limb. Abscesses seem about to form, but after a few days the redness fades, or rather changes to blue, and the bumps gradually subside. This eruption seems sometimes connected with disturbed menstruation; sometimes with acute rheumatism.

Treatment.—After an aperient, *rest, the horizontal posture and quinine* constitute the treatment. Perhaps some other tonic treatment might answer.

URTICARIA.—*Nettle-Rash* is an intensely hot, tingling rash, which itches and pricks greatly, especially at night when the patient is warm in bed, or exposed to the air. It is not contagious, and may happen to the same person often. The eruption consists of wheals, *i. e.*, of little solid eminences, irregular, but generally roundish or oblong; and either white or red, or most commonly both, the whiteness occupying the central and most projecting part, or becoming manifest there when the integuments are stretched. The stinging of nettles and the smart blow of a cane or whip-lash cause similar appearances and sensations. Urticaria may be *acute*, running a short course and soon subsiding; or *chronic*, being persistent, or intermittent. In the former, fever precedes the eruption two or three days, or, commonly, only a few hours; or it and the rash may begin together.

Causes.—In most cases, perhaps in all, the disorder is linked with some derangement of the stomach, or caused by particular kinds of food, as oatmeal, almonds, especially bitter almonds, any bitter kernels, particular kinds of strawberries, raw cucumbers, mushrooms; by capivi, eubebs pepper, valerian; or by porter, which probably has been drugged; or by shell-fish, prawns, crabs, mussels.

Symptoms are nausea, oppression about the epigastrium, giddiness, swelling of the face and head sometimes, burning and tingling of the skin, and eruption. Vomiting and diarrhea often supervene, and prove a cure. Great weakness in the patient, or virulence in the cause may perhaps induce death. The chronic form often continues, even for years. The evening is one of its favorite periods. In those subject to it, scratching or rubbing brings on the itching and wheals. This is the urticaria *evanida* of Willan. Nettle-rash sometimes occurs in connection with violent dyspnea,

resembling asthma fits, the lining of the air-passages being, perhaps, irritated like the skin. Sometimes chronic urticaria is produced by certain *ingesta*. The patient, by abstaining for a while from all his customary articles of diet, one by one, may often detect the peccant substance, and thus be cured. Sometimes, however, the urticaria abides, owing probably to some disorder of the stomach or bowels.

Treatment.—In acute, or febrile nettle-rash depending on something recently received into the stomach, an emetic and purgatives cure. In the more chronic and recurring varieties, detect the peccant article of diet and interdict it. This failing, try to correct the faulty state of the digestive organs, or to neutralize the inbred poison on which the disorder depends. For these ends, laxatives and antacids, together or separately, are the best remedies; a few grains of rhubarb daily just before breakfast and dinner; rhubarb and magnesia; the carbonate and sulphate of magnesia; castor oil. Some praise snake-root. A good prescription is a scruple each of the carbonates of magnesia and of soda, in the infusion of serpentaria.

External applications seem of little use, or are uncertain in their action and effects. The warm bath sometimes gives ease in the severer cases. In the more chronic form, spirituous washes, vinegar, sea-bathing, may be tried. Removal to a warmer climate has given permanent relief. Dusting the itching surface with flour has given much temporary comfort. Better, perhaps, is Wilkinson's lotion of carbonate of ammonia 3i, acetate of lead 3i, and rose-water ʒviii. To this, ʒss of laudanum may be added. In acute or febrile urticaria, and if the patient be strong and plethoric, and his pulse warrant it, you may use the lancet. Other treatment, however, is probably as effectual, though not quite so rapid.

PRURIGO.—*Itching*.—This is a skin affection; the itching parts sometimes appear perfectly natural, but, in most cases, they are covered with papulæ of the color nearly of the skin. The varieties are: *prurigo mitis*, *prurigo formicans*, *prurigo scnilis*. The torment in the severer forms is indescribable; the patients scratch till the blood flows, their sleep is broken, and their lives miserable. The blood, with some watery fluid from the papulæ, coneretes into small, thin, black scabs. Sometimes this itching is diffused irregularly; sometimes it affects the extremities only; often it occurs around the anus, *prurigo podicis*; or on the scrotum, *prurigo scroti*; or, worst of all, on the female genitals, *prurigo pudendi muliebris*. All these are apt to be aggravated by heat and exposure to air. In *prurigo formicans*, there is, with the itching, a feeling like the creeping of ants, or the stinging of insects, or the thrusting of hot needles into the skin. The *prurigo scnilis*, occurring in the old, is usually very obstinate, and often destroys all comfort for life.

Treatment.—The surface of the body should be thoroughly cleansed, and the diet rigidly plain; all rich sauces, hot condiment, pickles, and indigestible substances should be forbidden. *Local applications* are mostly useless. They are lime-water, vinegar, decoction of dulcamara, lotions composed of prussic acid in an emulsion of bitter almonds, a dilute solution of creasote, decoction of stanesacre, and of digitalis, ointments containing mercury, tar ointment, &c., &c. An ointment, containing a little aconitine, has effected perfect relief. A weak dilution of liquor sodæ chlorinatæ has answered well. Dr. Bowling of Adairville, Kentucky, has cured a great many cases of *prurigo scnilis* by sponging the part for a minute or so with good apple vinegar, and when dry he applies twice a day the citrine ointment, *unguentum hydrargyri nitratis*. This usually cures in a week, without any of the constitutional effects of mercury. Of internal remedies, sarsaparilla, alkalies, arsenic, the iodide of potassium, dulcamara, are the most hopeful. These failing, opium is our best

and only resource. Local prurigo is often connected with local disease; as prurigo podicis, sometimes with ascarides in the rectum, or with stone in the bladder, or with internal piles. Treat the primary disorder. The prurigo pudendi muliebris is sometimes so constant and tormenting as to drive the patient from society. It may cause nymphomania; it may proceed from leucorrhœa; it is often a sign of uterine disease, and most commonly affects women in whom the menstrual discharge has ceased to appear. *Yellow wash* (corrosive sublimate, 3 i, in lime-water, O i) is the best local application. Dr. Dewees of America recommends a saturated solution of borax. Aconitine might do good. Itching of the pubes and scrotum, produced by crab-lice, is relieved by the yellow wash, or by a lotion of corrosive sublimate, spirit and rose water. A single wash kills all the vermin, and turns them black.

THE ITCH, OR SCABIES.—This is a specific disorder, very common, very distressing, but easy to cure. It is contagious, but only by *contact* of the diseased person or fomites. It is most common at the roots of the fingers and thumbs, on the wrists, between the toes, in the flexures of the joints. It may spread to almost every part, but seldom to the face and head. The eruption is at first papular, and then vesicular, with a number of pointed watery heads. Intemperate habits or scratching, by aggravating the inflammation, is liable to convert the vesicles into pustules with inflamed bases; this is called scabies *purulenta*, *pocky itch*. The itch is fostered and propagated amidst poverty, vulgarity, and filth. Yet the most delicate and high-bred lady may contract it; and, unless properly treated, it goes on during life, for it never gets well of itself. Connected with this malady is a peculiar insect, the *acarus scabiei*, which, there is good reason to believe, is the cause of scabies. Inoculation with the fluid from the vesicles has often failed to produce the disease. It is believed that the *mange* in dogs, camels, and sheep, has the same or a similar origin. The disease is curable by whatever destroys the acari.

Treatment.—*Sulphur* externally is a specific, probably by killing the acari. The sulphur ointment (its smell being disguised by bergamot, and its color vermilion) should be carefully rubbed, at bed-time, all over the skin, especially where the eruption is visible. The patient should sleep enveloped in a flannel dress. The rubbing should be repeated night and morning, and in two or three days the itch will be subdued. Then wash thoroughly with soap and warm water, and burn the contaminated clothes.

LECTURE XC.

VESICLES are small transparent elevations of the cuticle, sometimes thinly scattered, sometimes collected in clusters, sometimes on a red surface, sometimes not. In some cases they all come out at once, in others irregularly. They terminate by desquamation, or by formation of little scabs, rarely by ulceration.

HERPES is a transient non-contagious eruption of irregular red patches of variable sizes, upon each of which stands a crop of vesicles. It runs a definite course in about ten days. Herpes *præputialis* has nothing to do with syphilis, or sexual intercourse, and requires no treatment beyond cold abluion, and a piece of lint between the prepuce and the glans penis. Herpes *circinatus*, the vesicular ring-worm, on the scalp, is liable to be mistaken for that pest of schools, the *favus confertus*, or *porrigo scutulata*.

of Willan, the common scald head. In *herpes iris*, which is a mere curiosity, each group of vesicles is surrounded by four concentric erythematous rings of different shades of color, which form and fade in succession. In *herpes zoster*, *zona*, *zona ignea*, the *shingles*, the patches lie like a band somewhat obliquely, encircling half the circumference of the body. It is most commonly confined to the trunk, especially the base of the thorax, lying between the linea alba and spine. Sometimes it extends to the limbs, but is rarely confined to them. It is said to occur most frequently on the right side. It very rarely encircles the whole body.

Symptoms of Herpes Zoster.—An important but uncommon symptom is an intense, deep-seated pain which shoots through the chest. This pain sometimes precedes, but oftener accompanies the eruption, and is apt to last, in spite of remedies, for some time after the eruption has disappeared. The severe and intermitting character of the pain and the direction of the patches, lead to the belief that the malady may arise from some fault in the nervous system.

Causes, &c.—Its cause is unknown. It is said to attack the young particularly, and those of fine skin, especially males. Children suffering from *zona* have been noticed to be in the nightly habit of wetting their beds. The disorder “seems occasionally to arise from exposure to cold after violent exercise,” sometimes from fits of anger. Sometimes it has appeared critical, when supervening on bowel complaints. The eruption lasts from ten days to a fortnight; but ulceration produced by friction may prolong it.

Treatment of Herpes.—Little can be done, or is requisite. Rubbing the vesicles should be avoided. Attend to the bowels and stomach; regulate the diet; correct any thing wrong. For the intense shooting pain, which is occasionally present, opiates, by friction over the affected region, may be tried; as the aconite ointment. Warm baths are proper; also carbonate of iron, as the pain is probably neuralgic.

ECZEMA is a non-contagious vesicular disease. The vesicles are very minute; scarcely prominent, closely crowded, and sometimes microscopic. They terminate either by the re-absorption of their fluid, or in superficial moist excoriations. There are several varieties. Great heat may cause it, particularly that of the sun; this is *eczema solare*, *heat-spot*. Substances which irritate the skin may cause it; as the grocer's itch, caused by handling sugar. Eczema on the scalp constitutes the most frequent form of scald-head, *porrigo*, or *tinca capitis*. The most severe form is *Hydrargyrum*, *Erythema mercuriale*, and *Eczema rubrum mercuriale*, which is occasionally an effect of mercury. The eruption begins usually in the groins and on the thighs, but soon extends, in severe cases, over the whole body, and consists of innumerable very small glittering vesicles. It is at first red, with much heat and itching. The swelling closes up the eyes. There is seldom much fever at first, but the disorder becomes febrile. The vesicles increase in size, turn milky, burst, and pour forth an acrid matter which irritates the skin and increases the local complaint. The fetid discharge is apt to become thick and hard and form large scabs. The disorder may be over in a fortnight, or last for several weeks. It terminates by the cessation of the discharge, and then the cuticle comes off in large flakes, sometimes entire from the hand, like a glove. It is not dangerous, but is apt to be obstinate.

Treatment.—This is chiefly palliative. Remedies have little control over it. The mildest local applications must be used; tepid water, barley-water, strained gruel; warm bath. Poultices sometimes prevent the hardening of the exuded matter. Flour, or powdered charcoal, sprinkled over the eruption, in the slightest and early cases, absorbs the discharge. Equal parts of olive oil and lime water make a soothing liniment. The local remedies

may be varied ; the patient's linen must be often changed. Opiates procure rest and allay irritation. Keep the bowels moderately open ; do not weaken the patient by severe purging. In protracted cases, when there is much exhaustion, wine is proper, and, almost always, good strong broths. As the disorder declines, give tonics ; the mineral acids, quina, sarsaparilla. Use no mercury. Mr. E. Wilson thinks that spontaneous eczema in children is readily curable. He gives calomel at moderate intervals to regulate the digestive organs, and then arsenic in small doses internally as a tonic, and oxide of zinc ointment externally. The sudden departure, however, of the disease has been followed by wheezing and oppressed breathing, which leave again when the disease re-appears.

BULLÆ, BLEBS.—These differ little from large vesicles ; they are hemispherical prominences, formed by serous or sero-puriform fluid beneath the cuticle, varying from the size of a pea to that of a hen's egg, and resembling bubbles raised in a pool by heavy rain. Pemphigus Pompholix is of the bullæ class ; the bullæ vary in size, are commonly distinct, but numerous, springing up in successive crops on one or more parts of the surface. At first they are nearly transparent, and contain a thin limpid serum, but gradually become opaque, pearl-colored, and finally many become reddish. In the acute form, which is very rare, there is smart fever, and the disease is quickly over. In the chronic form, (*Pompholix diutinus* of Willan and Bateman,) which is common, there is little or no fever unless the bullæ are very numerous ; the bullæ come out in crops for weeks, months, or years. The eruption is most common on the forearms and legs. The eruption begins in small red points, with a slight pricking sensation. In the centre of each of these the cuticle becomes lifted, while the circumference enlarge, so that the bullæ are rapidly formed, often in a few hours, as big as a hazelnut or walnut, or larger. When from distension or pressure some of these burst, a straw-colored serum exudes, and the epidermis wrinkles or, if partly detached, exposes a red, smarting surface. Towards the third or fourth day, when the bullæ lose their transparency, and their liquid becomes reddish, they wither, and the whitish cuticle forms at length small brownish flat crusts. Tense bullæ, thin crusts, and irregular patches, slightly excoriated, are generally seen in the same person. The disease is most frequent in the debilitated. Intemperance, or bad, or insufficient food are apparently causes. It is often coincident with the fatty liver.

Treatment.—In chronic, uncomplicated cases : regulation of the bowels ; nourishing food ; tonic medicines ; bitters, especially quina and the mineral acids. The local treatment is some mild ointment to the excoriated parts. Britt advises emollient lotions, or even opiate washes when much irritation exists. Dr. Graves, of Dublin, by one local application, cured cases of five years standing. The patient was a slender, delicate boy of fourteen years, who otherwise enjoyed good health. He had all the bullæ opened with a lancet, and the denuded surface touched with a stick of lunar caustic. The skin around each bullæ for the breadth of a line was also touched ; and the recent pimples were all treated in the same way. The boy was then washed and supplied with clean linen. This disease is not contagious.

SQUAMÆ.—Scaly eruptions are distinguished by red spots or blotches which form and constantly throw off lamina of altered cuticle. They differ from the rashes of the exanthemata ; for in the latter the redness is followed by desquamation ; in the squamæ these two appearances co-exist ; in the latter the redness and desquamation occur, generally, only once ; in the squamæ the cuticle scales off again and again, indefinitely from the abiding red patches of skin. Lepra, psoriasis and pityriasis, and some syphilitic symptoms, are the principal squamous affections.

LEPRA VULGARIS consists in red scaly patches of various sizes, of a cir-

cular shape, and scattered over the body, but seldom on the hairy scalp or hands. It commonly begins symmetrically on the limbs, most usually near the joints, just below the knees or elbows. This shows the blood is poisoned. By degrees the patches enlarge and multiply and extend to the trunk. The patches sometimes become confluent, but are defined by arcs of circles; and the disorder is distinguishable from psoriasis. The patches begin at their centres, and continue to get well in a ring-like shape towards their circumference. The eruption sometimes proceeds rapidly, sometimes lasts long. It is not contagious; is not, generally, attended with much local or constitutional disturbance. When very copious and extensive, especially round the larger joints, it renders the movements of the limbs stiff and difficult, and sometimes painful from the cracking of the surface. Lepra seldom exists unconnected with disorder of the stomach; dyspepsia disappears as the eruption comes out, and *vice versa*.

LEPRA ALPHOIDES is when the patches are small, chronic and white; syphilitic lepra, when they are of a more blue or livid, or copper color. Mercury cures this last species, but not the others.

PSORIASIS, when in distinct patches, resembles lepra. But, generally, the patches of psoriasis are not so broad as those of lepra; their edges are less raised, and their centres less depressed; the scales adhere more firmly; and the patches are less uniform and less circular. Psoriasis often spreads extensively, and may occupy nearly the whole body—this is psoriasis *diffusa*. It often renders the patient hideous. The incrustation is much chapped in all directions, especially in the natural folds and angles. These cracks, when stretched, are apt to bleed. In these severer cases, (psoriasis *inveterata*,) the incrustations are thick and very abundant, fall off perpetually, or are rubbed off into the clothes or bed in handfuls.

Treatment of Lepra and Psoriasis is the same. External applications are of little use, except the warm bath. Improve the health. The eruptions sometimes depend on excess of acid, and are often cured by alkalines; as *liquor potassæ* 3 ss to 3 i, three or four times daily, in a glass of milk, or water, or beer, or ginger tea. Arsenic, internally, does good. Neither of these two remedies is infallible. You will have to try many remedies. The Harrowgate-waters, a strong decoction of dulcamara, pitch-pills, (and perhaps, *a fortiori*, creasote,) tincture of cantharides, and the iodide of potassium, are remedies of some renown. Mercury cures syphilitic lepra. Regulate the diet and prohibit all stimulating food. Spices or ardent spirits may cause an attack of lepra. A very abstemious and simple mode of living may cure psoriasis.

PITYRIASIS consists in irregular brown patches, covered with small bran-like scales, which appear on the chest, neck, shoulders, abdomen, even forehead, and fall off and are succeeded by others.

Treatment.—A couple of sulphur baths has cured. The medication must be external. A saturated solution of sulphurous acid gas in water is effectual; or a wash containing corrosive sublimate.

IMPETIGO is a pustular disease. It consists of crops of pustules, sometimes scattered, sometimes in groups, which burst, or are broken, dry up, and scab over. The crusts are yellowish, very friable, and resemble little masses of candied honey, or sometimes small pieces of dirty plaster. From beneath these crusts a considerable discharge continues to take place; the crusts become thicker and larger, and around the margins the skin is red and raw, as it is also beneath them. There are various forms of the complaint; impetigo *figurata*, *sparsa*, &c. It often resembles eczema, and is called eczema *impetiginodes*, or an impetigo *eczematodes*. It is non-contagious. In acute impetigo, there is fever.

Treatment.—In the acute form, recovery is hastened by drawing blood,

which is buffy. Local applications should not be unctuous. Purgatives and alkalies internally, and a very weak spirit of alkaline lotion externally, with a scrupulous diet, are, perhaps, the best treatment. In chronic cases, with copious discharge, the oxide of zinc dusted over the surface from a thin muslin bag, or applied as a lotion, (grs. xv to $\frac{3}{4}$ i of rose-water,) is very good. This zinc lotion is very good in the *crusta lactæ*, which sometimes covers the faces of children.

BOIL, PUSH, TURUNCULUS, is at first a slight tender knot, which soon becomes red, and swells gradually to the size of a pea, hazelnut or walnut. The tumor is painful, and suppurates slowly. From the fourth to the eighth day, it acquires a conical shape with a white or yellow apex. At last the cuticle gives way, and a small quantity of pus mixed with blood escapes, and leaves visible a mass of dead areolar tissue, the *core*. In two or three days more, perhaps, the slough is expelled with more pus, and a deep cavity remains, which soon fills up, and the boil is over. Boils frequent the buttocks, thighs, arm-pit, nape of the neck, abdomen; they may occur almost anywhere. They are apt to come on in crops. Any irritation, as soap-plaster poultices, may cause them in a constitution predisposed. These phlegmons belong primarily and essentially to the subcutaneous areolar tissue. They are often accompanied by a saccharine condition of the urine.

Treatment.—Individual boils are intractable; the state of the system on which they depend may, perhaps, be corrected. A solution of corrosive sublimate in spirit; sticking-plaster; poultices; compound tincture of iodine, as a paint; cutting the crude tumor through; lint wetted with water and covered with oiled silk, have been tried; but, do what you will, you can seldom prevent or accelerate their course. Leeches, or cold, may prolong, but cannot arrest, their course. Sarsaparilla and liquor potassæ, and, when the system is below par, the sulphate of quina and a generous diet, are useful. Dilute sulphuric acid, m x to xv, twice daily, before meals, checks the tendency to boils. Sugar and all saccharine food should be avoided.

CARBUNCLE, ANTHRAX, is a gigantic boil, but it is more serious, and betokens constitutional vice. It is a large, flat, circumscribed, very hard, and very painful tumor, of a purplish red color, with burning heat. Its diameter may be four or more inches. It ends in the formation of a deep slough of more than corresponding dimensions and the destruction of the skin above it. A number of pinhole openings at length present themselves on the dark red surface, and disclose the immense core beneath. Anthrax occurs chiefly in advanced life, in corpulent males, and in persons who have lived fully. It is often attended with diabetes, and occurs most usually on the nape of the neck, buttocks, or between the shoulders. It produces high constitutional disturbance.

Treatment.—Surgeons are in the habit of dividing it by deep crucial incisions. This sharp practice gives speedy ease by removing tension. If tension be not manifest, or not much pain exists, leave the tumor to nature, and treat the system. Support is often needed; opiates are sometimes indispensable, and the bowels should be kept clear by purgatives. Destroying the central integument by caustic might be safer than the knife.

PURPURA.—Purples is not a skin disease; it is a hemorrhage. It consists of round, very rarely prominent, spots on various parts, generally on the legs first and most plentifully, of a dull red, or deep purple color. There is no local pain or other sensation. Unlike inflammatory spots, pressure does not efface their color, or render it fainter. The purple spots are sometimes intermixed with livid blotches, and exactly resemble bruises

both being anatomically the same and resulting from ecchymosis. The circular spots and ill-defined vibices, like bruises, before they disappear, change from red to a greenish yellow. Passive hemorrhages from various parts, especially from mucous surfaces, are common. The spots are found occasionally on all the internal surfaces, and within the substance of the viscera; on the surface of the mouth, throat, stomach, intestines, pleura-pericardium, peritoneum; in the substance of the muscles, on the membranes of the brain, and in the sheaths of the larger nerves. They have been accompanied with large hemorrhages in most of the vital organs.

SCURVY.—The spots and blotches of purpura exactly resemble the spots and bruise-like stains of scurvy. Scurvy is not caused by contagion, or cold weather, or impure air, or the continued use of salt provisions, but by the privation, for a considerable time, of fresh succulent vegetables. Purpura often occurs when there has been no deficiency of such food. Scurvy is most common in winter or the beginning of spring; purpura in the fruit seasons, summer and autumn. In scurvy the gums are uniformly soft, swelled, and spongy, and bleed readily; this is no necessary feature in purpura. Scurvy is marked by extreme debility and dejection of spirits; is always rendered worse by bleeding and mercury, and is infallibly and rapidly cured by the use of lemon juice, or other fresh fruits and vegetables. Purpura often requires venesection, is not surely, if ever, benefited by the anti-scorbutic juices, is not always attended by spongy gums, or by feebleness of the mind and body. It has cleared away speedily on the supervention of mercurial salivation and hypercatharsis. Vomiting of blood, coughing up of blood, bleeding of the mucous lining of the mouth and palate, the passage of blood from the bowels and with the urine, and a frequent and feeble pulse, are other symptoms of scurvy.

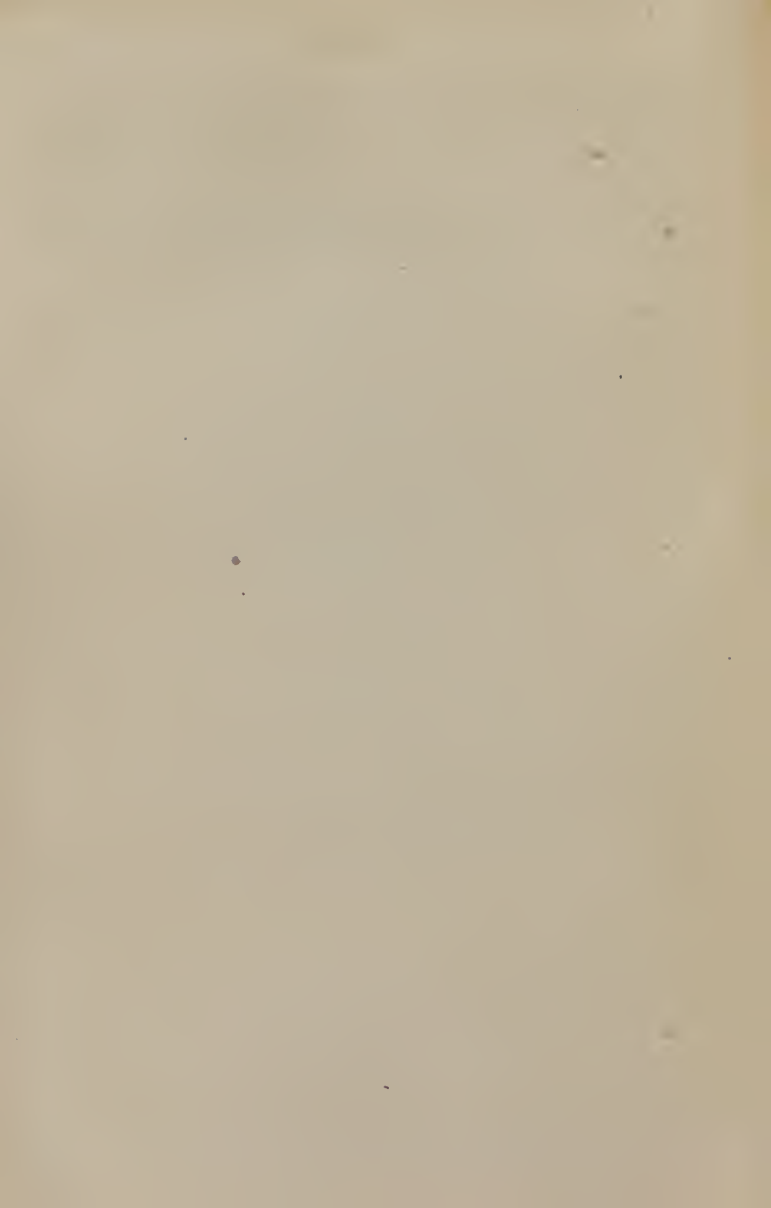
Treatment of Scurvy.—Lemon juice, as a preventive or remedy, is a specific against scurvy. It supplies some essential healthy property to the blood. Scarcely less, if indeed less at all, of anti-scorbutic virtue, belongs to the potato, cooked. From three to six pounds weekly, for each person, would likely suffice. Water-cresses as food are praised. A few grains of some salt of potass, the neutral tartrate, the chlorate, or the phosphate, in the food or as physic may answer. Support the patient's strength in such other ways as circumstances may dictate.

The anti-scorbutic fruits, roots, and herbs, contain one or more organic acids; as citric, tartaric, and malic. Scurvy may occur on land or sea. It is chiefly by investigating the previous history of the patient, by noting the degree of strength he possesses and the condition of his pulse, that we are to be guided in our diagnosis of ambiguous cases.

Treatment of Purpura.—Abstinence, venesection, and purgatives, in some instances at least of purpura, are efficacious. The Medical Gazette gives a case; several of the symptoms were very like those just mentioned. The tongue was livid, one-half resembled a large black, bleeding fungus, and on the inside of each cheek were several black fungoid patches. The patient voided unmixed blood from the bowels. There was no evidence of any debilitating cause, and the pulse, though frequent, was *hard*. Bleeding from the arm always gave relief to the uneasy sensations; the patient was purged and put on low diet. In four or five days the complaint disappeared, except the fading spots. For some time afterwards, however, the frequent use of active purgatives, and low diet, were necessary to obviate costiveness, and keep down the circulation, which had a tendency to become over-active. All cases are not of this sthenic character, nor do they require these heroic remedies. Your treatment must be guided by the previous circumstances and habits of the patient, by the state of his pulse, and by the other symptoms. In doubt, make a cautious tentative

bleeding. Take a couple of ounces at a time, note carefully the appearance of the blood, and the effects of blood-letting on the patient, and then continue or stop the bleeding according to circumstances. In many cases your chief reliance will be placed in the watchful use of purgatives. Oil of turpentine, in moderate and repeated doses, has been praised as a remedy in purpura.

One peculiar source of danger in purpura is death from the effusion of blood into some vital organ. These diseases are *blood diseases*. The blood drawn in scurvy in many cases does not separate into serum.



APPENDIX.

MEDICAL SIGNS AND ABBREVIATIONS.

- āā.* Ana, Of each.
Ad saturand. Ad saturandum, Until saturated.
Ad lib. Ad libitum, At pleasure.
Aq. tepid. Aqua tepida, Warm water.
Aq. ferv. Aqua fervens, Hot water.
Aq. bull. Aqua bulliens, Boiling water.
Charts, or Chts. Chartulæ, Papers.
Coch. mag. Cochlear magnum, A tablespoonful.
Coch. parv. Cochlear parvum, A teaspoonful.
Col. Cola, Strain.
Collyr. Collyrium, Eye-water.
Contus. Contusus, Bruised.
Cort. Cortex, Bark.
Decoct. Decoctum, A decoction.
Ext. Extractum, An extraction.
F. vel Ft. Fiat or Fiant, Let there be made.
Fol. Folium, A leaf.
Garg. Gargarisma, A gargle.
Gr. vel Grs. Granum vel Grana, A grain or grains.
Gtt. vel Gtts. Gutta vel Guttæ, A drop or drops.
Haust. Haustus, A draught.
Infus. Infusum, An infusion.
ꝰ. Minimum vel Minima, A minim or minims.
M. Misce, Mix.
Mass. Massa, A mass.
Mist. Mistura, A mixture.
Pil. Pilula vel Pilulæ, Pill or pills.
Pv. vel Pulv. Pulvis vel Pulveres, Powder or powders.
q. s. Quantum sufficit, A sufficient quantity.
R. Recipe, Take.
Rad. Radix, Root.
Ras. Rasus, Rased.
S. Signa, Write.
Sem. Semen, A seed.
Ss. Semis, A half.
Spts. Spiritus, Spirits.
Syr. Syrupus, A syrup.
Tc. Tinct. Tinctura, A tincture.

APOTHECARIES' WEIGHT.

20 grains, grs.,	make a scruple, \mathfrak{S} .
3 scruples	" a drachm, \mathfrak{Z} .
8 drachms	" an ounce, \mathfrak{Z} .
12 ounces	" a pound, \mathfrak{lb} .

APOTHECARIES' MEASURE, (*liquid.*)

60 minims, \mathfrak{m} ,	make a drachm, \mathfrak{Z} .
8 drachms	" an ounce, \mathfrak{Z} .
16 ounces	" a pint, \mathcal{O} .
8 pints	" a gallon, Cong.

A minim contains more or less drops, according to the nature of the liquid, the size of the bottle from which it is dropped, &c.

A teacup	contains about.....	\mathfrak{Z} 4.
A wineglass	" " \mathfrak{Z} 2.
A tablespoon	" " \mathfrak{Z} ss.
A teaspoon,	" " 3 i.

THE PULSE.

A Table of the average frequency of the pulse in health, at different ages, obtained by comparing different authorities.

In the fetus in utero.....	140 to 150
At birth.....	130 to 140
During 1st year.....	108 to 130
" 2d "	90 to 115
" 3d "	80 to 105
From 7th to 14th year.....	72 to 90
" 14th to 21st "	75 to 85
" 21st to 60th "	60 to 75
Old age.....	50 to 80

The pulse is generally more frequent in females, during and after exertion, during digestion or mental excitement, and in the morning; but less frequent in health, in the nervous and phlegmatic.

Table of Doses according to Age, (Dunghlison.)

AGE.			
24	let the full dose be.....	1,	3 i.
18	will require.....	$\frac{2}{3}$,	3 ii.
14	“	$\frac{1}{2}$,	3 ss.
7	“	$\frac{1}{3}$,	3 i.
4	“	$\frac{1}{4}$,	grs. xv.
3	“	$\frac{1}{6}$,	grs. x.
2	“	$\frac{1}{8}$,	grs. viii.
1	“	$\frac{1}{12}$,	grs. v.

Dr. Thomas Young's Rule for the same: "For children under twelve years the doses of most medicines must be diminished in the proportion of the age to the age increased by twelve. Thus, at two years to $\frac{1}{7}$, i. e.,

$$\frac{2}{12 + 2} = \frac{1}{7}$$

At twenty-one the full dose is given.

AN ALPHABETICAL LIST OF THE MEDICINES MENTIONED IN THIS WORK.

Alumen, Alum, Sulphate of Alumina and Potassa.—M. P. Astring., Antispas., Purg., Emet. As astring., grs. x-xx every 2 or 3 hours. As purge in colica pictonum, 3 ss-ii, every 3 or 4 hours. As emet. in croup, a teaspoonful in honey, &c., every 10-15 minutes till it vomits.

Antimonii et Potassæ Tartras, Tartarized Antimony, Tartar Emetic.—Alt., gr. $\frac{3}{16}$ - $\frac{1}{2}$; Diaph. and Expect., gr. $\frac{1}{12}$ - $\frac{1}{6}$; Naus., Sudorif., gr. $\frac{1}{4}$ - $\frac{1}{2}$; in each case repeated every 1, 2 or 4 hours. Purg., gr. i, and Epsom Salts, $\frac{3}{4}$ i, dissolved in water, O ss, and 2 tablespoonfuls given every 2 or 3 hours. Emet., grs. ii-iii, or gr. i, in a tablespoonful water, every 10-15 minutes till it vomits. Externally, Count. Irrit.

Vinum Antimonii, Liquor Antimonii Tartarizati.—Expect. or Diaph., gtts. x-xxx, frequently. Emet. for children, gtts. xxx-3 i, every 15 minutes.

Pulvis Antimonialis, Pulv. Antimonii Comp.—Diaph., grs. iii-viii, every 3-4 hours in pill. Purg. or Emet. in larger doses.

Liquor Ammoniacæ Acetatis, Spiritus Mindereri.—Diaph., $\frac{3}{4}$ ss-iss, every 3-4 hours in sugared water.

Spiritus Ammoniac Aromaticus.—Stim., Antispas., gtts. xxx-3 i, or more, sufficiently diluted with water.

Liquor Ammoniac Citratis.—Refrig., Diaph., $\frac{3}{4}$ ss of saturated solution, every 1, 2 or 3 hours.

Ammoniac Carbonas, Ammoniac Sesquicarbonas, Sal Volatile.—Stim., Diaph., Antispas., powerful Antac., in large doses, Emet. D. gr. v, every 2, 3, or 4 hours, given in form of pill or mixture. Emet., grs. xxx, repeated if necessary, assisted by free dilution. Externally, Rubefac.

Ammoniac Murias, Sal Ammoniac.—Purg. in large doses; seldom used internally. Externally Stim. and Resolv. D. grs. v-xxx, every 2 or 3 hours.

Acidum Hydrocyanicum Dilutum, Prussic Acid.—A most deadly poison. Diluted it is Anod. and Antispas. D. of medicinal acid of U. S. Pharm. is gtts. ii-vi, dissolved in distilled water, gum water, or syrup. Begin with gtts. ii, and gradually increase till some obvious impression is produced. Antidotes are chlorine, ammonia, cold affusion, and artificial respiration.

Acidum Sulphuricum Dilutum.—Tonic, Refrig., Astring. D. gtts. x-xxx, 3 times a day in a wineglassful of plain or sweetened water.

Acidum Nitricum.—Tonic, Antisep. D. \mathfrak{v} v, xx in water $\frac{3}{4}$ iii or more, 3 or 4 times a day.

Acidum Nitricum Dilutum.—D. gtts. xx-xl, 3 times a day, sufficiently diluted with water.

Acidum Nitro-Muriaticum.—Internally in hepatic and syphilitic diseases, and in the oxalic lithiasis. D. gtts. iii-iv largely diluted with water; externally by sponging, or in form of local or general bath. By sponging, it is first diluted to have the acidity of strong vinegar. As foot-bath use $\frac{3}{4}$ vi to gal. iii of water.

Acidum Phosphoricum Dilutum.—Tonic, Refrig. gtts. xx to a teaspoonful, diluted with water.

Aconitum Napellus, Aconite.—Poison, Powerful Sed. to nervous system, reducing also the force of the circulation. Powdered leaves, gr. i-ii. Ext. gr. ss-i. Tinct. Foliorum, gtts. xx-xxx. Tinct. Aconiti Radicis, gtts. v-x. 2 or 3 times a day and gradually increased till its effects appear. Topically, Ung.

Liquor Arsenicalis—*Liquor Potassæ Arsenitis*, *Fowler's Solution*.—Alt., Febr. gtts. x, 2 or 3 times a day for adult. Topically in solution.

Aloes.—Cath. warm and stimulating. Emmen., Stomach., Anthel., Cath. grs. x-xx. Lax. grs. ii-iii in pill.

Argenti Nitras, *Nitrate of Silver*.—Tonic, Antispas., gr. $\frac{1}{4}$, gradually increased to grs. iv-v, 3 times a day, in pill. Externally, Stim., Eschar. Over-dose, corrosive poison: Antidote, common salt.

Assafœtida.—Stim., powerful Antispas., Expect., Lax. and some think Emmen., Anthel. grs. x, in pill or emulsion.

Mistura Assafœtida.—1-2 tablespoonfuls often repeated. As enema $\frac{3}{4}$ ii-iv. *Tinctura* 3 i.

Pulvis Aromaticus, *Aromatic Powder*.—Stim., Carmin. grs. x-xxx.

Belladonna.—Powerful Narcot., also Diaph., Diur., Lax. Of *Powdered leaves* for children, gr. $\frac{1}{8}$ — $\frac{1}{4}$; for adults, gr. i-ii daily or twice a day. *Extract*, gr. $\frac{1}{4}$ — $\frac{1}{2}$, 2 or 3 times a day: the powder or ext. to be gradually increased till its effects are produced. To child 2 years not more than gr. $\frac{1}{12}$ at first. *Infusion*, $\frac{3}{4}$ i-ii for adult. *Atropia*, internally is hazardous, gr. $\frac{1}{30}$, gradually increased. Over-doses, powerful poison. Emetics or stomach-pump first, then purgatives and purg. enemata, infus. galls are remedies.

Cinchona, *Peruvian Bark*.—Tonic, Anti-inter., Febr. 5 i, *Decoction* $\frac{3}{4}$ ii; these to be repeated according to circumstances. *Tinctura* 3 i-iv. *Tinct. C. Comp.*, 3 i-iv. *Infusion*, $\frac{3}{4}$ ii, 3 or 4 times a day. *Quinæ Sulphas* as tonic, gr. i, 3, 4, or more times a day. In intermittents, grs. xii-xxiv between the paroxysms. In malignant intermittents and remittents grs. xxx-3 i may be used between the paroxysms.

Bismuthi Subnitrates, *Bismuthi Trisnitrates*.—Tonic, Antispas., grs. v, gradually increased to grs. xii-xv, 2 or 3 times a day, in pill or equal weight of aromatic powder.

Borax, *Sodæ Boras*.—Refrig., Diur., grs. xxx-xl. Externally, as solution in scaly skin diseases. In aphthæ of children it is often applied, one part of the powder mixed with seven of sugar,

or rubbed up in honey. *Mel Boracis* is used in the thrush of infants and aphthæ of mouth.

Bistort.—Astring. Of the powder grs. xx-xxx, 3 or 4 times a day.

Cantharides, Spanish Flies.—Powerful Stim. In moderate doses sometimes Diur. Sometimes causes strangury. D. gr. i-ii of powder, which may be given twice a day, in pill. *Tinctura*, gtts. xx-3 i, 3 or 4 times a day. Externally, Rubef., Epispastic.

Cherry Laurel Water, Aqua Lauro-Cerasi.—Anod., Antispas., Sed., Narcot., ℥ xxx-3 i.

Colchicum, Meadow Saffron.—Anod., Sed., Diaph., Diur., Expect. D. (dried bulb) grs. ii-viii. 1 every 4 or 6 hours. *Vinum C. Radicis*, ℥ x-3 i, 3, 4, or more times a day till their effects are obtained. *Acetum C.*, gtts. xxx-3 ii. *Extractum C. Aceticum*, gr. i-ii, 2 or 3 times a day, increased if necessary. *Extractum C.*, gr. i-ii. *Vinum C. Seminis*, 3 i-ii. *Tinctura C. Composita*, gtts. xxx-3 i. *Tinctura C. Seminis*, 3 ss-ii.

Chlorinii Liquor, Chlorine Water.—Stim., Antisep., 3 i-iv, properly diluted.

Conium, Hemlock.—Narcot., Sed. D. of powdered leaves, or of Extract, grs. iii-iv, twice a day, gradually increased till slight vertigo or nausea indicates its effects. *Tinctura*, ℥ xxx-3 i. *Extract Conii Alcoholicum*, grs. ii-iii to begin with.

Chamomile Flowers, Anthemis.—Tonic in small doses of cold infusion; Emet. in large doses of warm infusion. D. of powders as Tonic, 3 ss-i, 3, 4, or more times a day. *Infusion* (cold) 3 ii, several times a day.

Camphora, Camphor.—Stim., Diaph., Anod., Narcot., Antispas. gr. i-xx. Medium D. grs. v-x. *Aqua Mistura C.* 1-2 table-spoonfuls every 1 or 2 hours. Locally Anod.

Capsicum, Cayenne Pepper.—Powerful Stim. *Pulvis C.* grs. v-x. *Infusum C.* 3 ss. *Tinctura* 3 i-ii. Externally Rubef.

Pulvis Cretæ Compositus cum Opio.—D. grs. x-xx in diarrhœa of adults, several times a day or after each evacuation.

Cusparia, Angustura.—Stim.-Tonic. *Pulvis C.* grs. x-xxx. *Extract* grs. v-xv. *Infusum*, ℥ ii, every 2, 3, or 4 hours. *Tinctura* ʒ i-ii.

Cinnamomum, Cinnamon.—Aromat., Stomach., Carmin., Astring. *Pulvis* grs. x-ʒ i. *Tinctura* ʒ i-iii-iv.

Cathartic Extract, Extractum Colocynthis Compositum.—Energetic and safe. Cath., with little drasticity; in small doses lax. grs. v-xxx, according to object.

Pilulæ Catharticæ Compositæ, Compound Cathartic Pill.—Lax. 1 pill. Purg. in adults 3 pills.

Cowhage, Dolichos Pruriens.—Mechanical Vermifuge, administered mixed with some tenacious vehicle.

Cupri Sulphas, Sulphate of Copper.—In small doses Astring. and Tonic, gr. $\frac{1}{4}$ gradually increased. In large ones, prompt Emet. grs. ii-v. Externally Stim.

Cuprum Ammoniatum.—Tonic, Antispas. gr. $\frac{1}{4}$ - $\frac{1}{2}$, 2 times a day, and gradually increased to gr. iv-v, in pill or solution.

Castoreum, Castor.—Stim., Antispas., Emmen. grs. x-xx, in bolus or emulsion. *Tinctura* ʒ ss-ii.

Cochineal, Coccus.—Supposed to be Anod. D. for infants with hooping-cough, gr. $\frac{1}{3}$, 3 times a day. *Tinctura*, D. for an adult, gtts. xx-xxx, twice a day.

Columba, Columbo.—Mild Tonic, without astringency. *Pulvis* grs. x-xxx, repeated, if required, 3 or 4 times a day. *Infusum* ʒ ii, 3 or 4 times a day. *Tinctura* ʒ i-iv.

Cascarilla.—Aromat.-Tonic. *Pulvis* ʒ i-3 ss, repeated, if required, several times a day. *Infusum* ʒ ii.

Creasotum, Creasote.—Irrit., Narcot., Stypt., Antisept., Eschar. gtt. i-ii or more several times a day, diluted with ʒ ss of weak mucilage to a drop. Externally in eruptions, ulcers, &c., gargles, injections, gtts. ii-iv-vi to distilled water, ʒ i.

Catechu.—Gentle Tonic, Powerful Astring. grs. x-3ss, often repeated. *Infusum C. Compositum*, $\frac{3}{4}$ i-iii, 3, 4 or more times daily. *Tinctura* 3 ss-iii.

Mistura Cretæ, Chalk Mixture.—Used in looseness of bowels with acidity $\frac{3}{4}$ ss, often.

Digitalis, Foxglove.—Narcot., Sed., Diur. *Pulvis* gr. i. 2 or 3 times a day, and gradually increased till its effects are produced. *Infusum* $\frac{3}{4}$ ss, twice a day, under ordinary circumstances; every eight hours in urgent cases, till the system is affected. It is safer to begin with 3 ii, and increase if required. *Tinctura* gtts. x-xx, 2 or three times a day, increased if necessary, but cautiously. *Digitaline* gr. $\frac{1}{16}$ – $\frac{1}{32}$, not beyond gr. $\frac{1}{12}$.

Dulcamara, Bittersweet.—Feeble Narcot., Diaph., Diur. *Pulvis* grs. xxx-3 i. *Extract* grs. v-x. *Decoction* $\frac{3}{4}$ i-ii, 3 or 4 times a day, or oftener.

Ether Sulphuricus.—Diff.-Stim. also Expect., Antispas., Narcot. gtts. i-3 i, repeated often if required. Externally, Stim. Rubef. if not allowed to evaporate. Refrig. if allowed. *Spiritus E. S.* 3 i-iii in sweetened water. *Spiritus E. S. Compositus, Hoffman's Anodyne Liquor*, 3 i-ii in sweetened water. *Spiritus Etheris Nitrici, Sweet Spirit of Nitre*, Diaph., Antispas. 3 i, every 2 or 3 hours, in water; Diur. in larger doses.

Ferrum, Iron.—The preparations of Iron are powerfully tonic. *Ferri Subcarbonas, Ferri Carbonas, Subcarbonate of Iron*, Tonic, Alt., Emmen. gr. v-xxx, 3 times a day, in pill or powder. In neuralgia, chorea, tetanus, D. i-ii teaspoonfuls. *Ferri Sulphas, Sulphate of Iron*, Astring., Tonic, gr. i-v, in pill.

Tinctura Ferri Murialis, Tinctura Ferri Chloridi, \mathfrak{xx} x-xxx, increased if necessary to 3 i-ii, 2 or 3 times a day, diluted with water. *Vinum Ferri, Wine of Iron*, $\frac{3}{4}$ ss-i, several times a day. *Mistura Ferri Composita, Griffith's Mixture*, $\frac{3}{4}$ i-ii, 2 or 3 times a day.

Male Fern.—Tonic, Astring., Anthel. *Pulvis* 3 i-iii in electuary or emulsion, morning and evening for 1 or 2 days. *Ethereal Extract*, grs. xii-xxiv.

Lenitive Electuary, Confectio Sennæ.

Guaiaci Resina, Guaiacum, Guaiac.—Stim., Alt., Emmen. In large doses Purg. D. *Pulvis* grs. x-xxx in pill, bolus, or emulsion. *Mistura* $\frac{3}{4}$ ss-iss, 2, 3 or more times a day. *Tinctura* 3 i-iii, 3 or 4 times a day. *Tinctura G. Ammoniata* 3 i-ii.

Galbanum.—Stim., Expect., Antispas. grs. x-xx in pill or emulsion. Seldom used internally.

Guaco.—Mild Tonic and Stim. *Infusum* $\frac{3}{4}$ ii.

Ox-Gall.—Supposed to be Tonic and Lax. grs. v-x.

Mistura Spiritus Vini Gallici, a Stim. and Nutritive draught.

Gentiani, Gentian.—One of the simple bitters. Tonic, highly. *Pulvis* grs. x-xl. *Infusum G. Infusum G. Compositum* $\frac{3}{4}$ i, 3 or 4 times a day. *Tinctura G. Composita* 3 i-ii. *Mistura G. Composita*, Tonic, Cath. $\frac{3}{4}$ i-ii. Gentian powder has been applied externally to malignant and sloughing ulcers.

Hydrargyri Chloridum Mite, Calomel.—Purg., Anthel. As Alterative grs. ss-i, every night, or other night, followed in the morning, if the bowels are not opened, by a gentle saline laxative; or when stomach or bowels are very irritable, gr. $\frac{1}{8}$ or $\frac{1}{4}$ every hour or two, so as to amount to gr. i-ii in the day. To *salivate*, gr. $\frac{1}{2}$ -i 3 or 4 times a day, to be much increased in urgent cases. Or minute doses as gr. $\frac{1}{12}$ or less, given very often, so as to amount to the ordinary quantity in 24 hours. Opium prevents calomel from purging. Purg. grs. v-xv or more. Not less than grs. iii-vi should be given as Purg. to a child 2 or 3 years old.

Hydrargyrum Cum Cretâ.—Very mild mercurial, grs. v-3 ss twice a day. For child, grs. ii-iii.

Pilule Hydrargyri, Blue Pills, Blue Mass.—Mildest of the mercurials. As *Sialagogue* one (off.) pill 2 or 3 times a day in urgent cases; more, or very minute doses, as gr. $\frac{1}{2}$ -i of the mass every 1 or 2 hours through the day. As *Alterative*, one pill every night or every other night, and followed in the morning, if the bowels are not opened, by a small dose of laxative medicine. Purg. grs. v-xv, combined with, or followed speedily by, a more certain purgative.

Hydrargyri Iodidum, Iodide of Mercury.—Has been given in scrofula and scrofulous syphilis. D. gr. i, daily, gradually increased to grs. iii-iv. Should not be given at same time with iodide of potassium.

Unguentum Hydrargyri Oxidi Rubri, Red Precipitate Oint-

ment.—Stim. Ointment in indolent and foul ulcers, &c., diluted with lard if too stimulating.

Unguentum Hydrargyri Nitratis, Citrine.—Stim. and Alt. application in porrigo, crusta lactæ, and various ulcerative and eruptive affections—diluted with lard, as it is generally too stim.

Unguentum Hydrargyri, Mercurial Ointment.—This is rubbed on the body to produce the general effects of mercury. It is used as a resolvent in local affections. To *salivate*, about 3 i should be rubbed, night and morning, into the inner surface of the thighs, legs, or arms, and continued till the system is affected. In urgent cases or local affections it may be rubbed on other parts, or applied to blistered surfaces. The friction, on each occasion, should be continued till the whole of the ointment is absorbed.

Hyoscyamus, Henbane.—Anod., Sopor., occasionally Diaph. or Diur., slightly Stim., Antispas., does not constipate. Externally Anod. to ulcers, &c. D. of *powdered leaves*, grs. v–x; of seed, less. *Extractum*, grs. ii–iii; *Extractum H. Alcoholicum*, gr. i–ii: these Exts. to be increased gradually till desired effects are obtained. *Tinctura* 3 i–ii.

Helleborus Niger, Black Hellebore.—Dras.-Hydrag.-Cath., Emmen. D. of *powdered root*, as Purge, grs. x–xx; as Alt. grs. ii–iii. *Extractum* grs. xii–xv. *Tinctura* 3 ss–i, night and morning.

Iodinium, Iodine.—Stim., Coros., Desic., Tonic, Diur., Diaph., Emmen. Also externally *Tinctura*, not much used internally. D. gtts. x–xx, may be gradually increased to gtts. xxx–xl, 3 times a day. *Liquor Iodini Compositus*, gtts. vi, (= about of iodine, gr. $\frac{1}{4}$.) 3 times daily, given in 3 ii sweetened water, and gradually increased. For children, to begin with, gtts. ii twice a day, increased gradually to v.

Ipecacuanha, Ipecac.—In large doses, Emet.; in smaller, Diaph., Expect.; in still smaller, Stomach. D. Powder, as Emet., grs. xx, repeated every twenty minutes, if necessary, till it operates. As Nauseant, grs. ii, repeated according to circumstances. Diaph. gr. i. As Alt., in diseases of stomach and bowels, gr. $\frac{1}{4}$ – $\frac{1}{2}$, 2 or 3 times a day. *Emetia*, impure, gr. i– $\frac{1}{2}$; of pure, not more than gr. $\frac{1}{2}$, repeated at proper intervals till it vomits.

Pulvis Ipecacuanhæ et Opii. Pulvis Ipecacuanhæ Compositus, Dover's Powder.—Grs. v–xv every 4, 6 or 8 hours, if required to maintain a continued Diaph. Grs. x contain gr. i of opium.

Syrupus Ipecacuanhæ.—Emet. for adult, 3 i–ii; for child 1 or 2

years old, 3 i-ii; repeated every 15 or 20 minutes till it acts. As Expect. for an adult, 3 i-ii; for a child, ℥ v-xx.

Vinum Ipecacuanhæ. Wine of Ipecac.—As Emet. for adult, 3 i. As Expect. and Diaph. ℥ x-xxx. As Emet. for child 1 or 2 years old, 3 i, every 15 minutes till it operates.

Jalapa, Jalap.—Active Hydrag.-Cath. *Pulvis*, grs. xv-xxx. *Extractum*, grs. x-xx. *Tinctura*, 3 i-ii, is sometimes added to cathartic mixtures to increase their activity.

Kino.—Powerful Astring. *Pulvis*, grs. x-xxx. *Infusum* (Ext. K. 3 ii, Aq. Bul. 3 viii, strain) 3 i; *Tinctura* 3 i-ii. *Pulvis Kino Compositus*, grs. v-3 i.

Krameria, Rhatany.—Gentle Tonic, powerful Astring. *Pulvis* grs. xx-xxx. *Infusum* or *Decoctum* (Bruised or Powdered Root, 3 i, Aq. O i) 3 i-ii. *Extractum* grs. x-xx. *Tinctura* 3 i-ii. *Syrupus*, for adult, 3 ss; for child 1 or 2 years old, ℥ xx-xxx.

Lactuca, Lettuce.—*Lactucarium.* Inspissated juice of lettuce. Sopor., Sed., Anod., grs. v-xv-xx. *Extractum Lactucæ*, grs. v-xv. *Tinctura Lactucarii*, 3 ss-ii.

Lime-Water, Liquor Calcis.—Antae., Tonic, Astring. 3 ii-iv, several times a day. To allay nausea, 3 ss mixed with 3 ss of new milk every $\frac{1}{2}$, 1 or 2 hours. Used externally as wash in tinea capitis, &c.

Lobelia.—Powerful Emet., occasionally Cath., in small doses Diaph., Expect., Narcot. *Pulvis*, as Emet., grs. v-xx, repeated, if necessary.

Tinctura, Emet. for adult 3 ss; or, in asthma, 3 i-ii every 2-3 hours till its effects are produced.

Opium.—Stim., Narcot., Excit., Anod., Sed., Sopor., Antispas. *Pulvis*, gr. i is medium dose. The quantity, as a general rule, that may be administered by the rectum, is three times that by the mouth. Remedies for an over-dose: stomach pump; tartarized antimony, sulphate of zinc, or sulphate of copper, conjoined with ipecac., the vomiting being promoted by the very free use of warm drinks; irritating the fauces with a feather, keeping the

patient in motion, and, if the emetic does not act, dashing cold water on the head and shoulders; sometimes a moderate loss of blood. Remedies to obviate the debility which generally supervenes on the evacuation of the poison: carbonate of ammonia, or aromatic spirits of ammonia, with wine whey internally, and sinapisms and stimulant frictions to the surface; strong coffee; artificial respiration.

Morphiæ Murias.—D. gr. $\frac{1}{6}$, which equals gr. i of opium.

Morphiæ Acetas, grs. $\frac{1}{3}$ – $\frac{1}{4}$, repeated, if necessary; gr. $\frac{1}{6}$ equals gr. i of opium.

Morphiæ Sulphas, gr. $\frac{1}{8}$ – $\frac{1}{4}$. This in pill or solution.

Extractum Opii, *Extractum Opii Aquosum*.—D. $\frac{1}{2}$ that of opium.

Tinctura Opii Laudanum.—D. ℥ xiii, or gtts. xxv, which is equal to gr. i of opium. 3 i affords gtts. cxx.

Tinctura Opii Camphorata, *Paregoric Elixir*.—D. for adult, 3 i–ii; for an infant, gtts. v–xx. 3 ss contains rather less than gr. i of opium.

Vinum Opii, *Wine of Opium*, *Sydenham's Laudanum*.—D. same as Tincture.

Confectio Opii, *Confection of Opium*.—One grain of opium is contained in about 36 grains.

Syrupus Papaveris, *Syrup of Poppies*.—D. for adult, 3 ss–i; for an infant, 3 ss–i.

Acetum Opii, *Vinegar of Opium*, *Black Drop*.—Gtts., or ℥ vii–x.

Battley's Sedative, *Liquor Opii Sedativus*.—The only ingredients employed in preparing this are opium, water, and heat.

Manna.—Gentle Lax. D. for adult, 3 i–ii; for child, 3 i–iv; usually dissolved in water or some aromatic infusion.

Magnesia Sulphas, *Sulphate of Magnesia*, *Epsom Salt*.—Mild Hydrag.-Cath. 3 i is medium dose.

Magnesie Carbonas.—Antac., and, by combining with acid in the stomach, purg.; also antilithic in uric acid diathesis. D. 3 ss–ii, suspended in water or milk.

Moschus, *Musk*.—Stim., Antispas. Medium D. grs. x in pill or emulsion, every 2–3 hours. To children it may be given in enema.

Artificial Musk, *Moschus Factitius*.—Antispas., Nervine. D. grs.

x for adult; gr. $\frac{1}{2}$ –i for a child 2 years old, repeated in each case every 2–3 hours. *Tinctura* (artificial musk 3 i, alcohol 3 i) for adult, 3 i.

Oleum Cajuputi, Cajeput Oil.—A volatile oil, highly stim., gtts. i–v, in emulsion, or on a lump of sugar.

Oleum Terebinthinæ, Oil of Turpentine, Spirits or Spirit of Turpentine.—Stim., Diur., occasionally Diaph., Anthel., in large doses Cath.; externally Rubef. D. gtts. v–xxx every 1–2 hours in acute, and 3–4 times a day in chronic cases. In rheumatism, some recommend 3 i every 4 hours. For tape worm, 3 i–ii, followed by castor oil, if it do not operate in 3–4 hours. For tænia, 3 ss twice a day for a considerable time. It may be given on sugar, or in emulsion with gum Arabic, loaf sugar, and cinnamon or mint water.

Oleum Ricini, Castor Oil.—Mild Cath. D. for adult 3 i, for an infant 3 i–ii–iii.

Oleum Tiglii, Croton Oil.—Powerful Hydrag. Cath. D. for adult, gtt. i–ii in pill or emulsion. Externally it inflames the skin.

Oleum Succini Rectificatum, Rectified Oil of Amber.—Stim., Antispas., occasionally promotes the secretion, especially the urine. D. gtts. v–xv, diffused in some aromatic water by means of sugar and gum Arabic. Externally, Rubef.

Plumbi Acetas, Acetate of Lead, Sugar of Lead.—Powerful Astring. and Sed.; in over-doses, an irritant poison. When long continued in small doses, it is apt to produce *colica pictonum* and *lead palsy*. D. gr. i–iii in pill, every 2–3 hours, generally combined with opium. Solution for external use, 3 ii–iii in Aqua O i. When the skin is denuded of the cuticle, the solution should be weaker, as collyrium, gr. i–ii to Aqua Destil. 3 i.

Liquor Plumbi Subacetatis, Liquor Plumbi Acetatis, Goulard's Extract.—Used only externally. Astring., Sed. Always requires to be diluted, as 3 ss–i to Aqua Destil. O i; if the skin is denuded of the cuticle, this solution should be weaker. Applied to inflamed surfaces, as from sprains, &c.

Granati Fructus Cortex, Pomegranate Rind, Granati Radicis Cortex, Bark of Pomegranate Root.—Rind of Fruit and Flowers, Astring. Bark of Root, Anthel. D. of Rind or Flowers in *pow*—

ders, grs. xx-xxx. *Decoctum Granati* (Rind) \mathfrak{z} i. *Decoctum Granati Radicis*. D. Wineglassful every $\frac{1}{2}$ -1 or 2 hours until the whole of the following is taken : bruised bark, \mathfrak{z} ii, macerated for 24 hours in water, O ii, and then boiled to O i.

Potassii Iodidum, Iodide of Potassium.—Increases the secretions. Alt. D. grs. ii-x, or more, 3 times a day in solution. Externally as ointment.

Liquor Potassii Iodidi Compositus.— \mathfrak{z} i, containing gr. $\frac{1}{4}$ of Iodine, gradually increased to \mathfrak{z} ii, or more, diluted, at time of taking, with an equal bulk of water.

Potassæ Acetas, Acetate of Potassa.—Diur. \mathfrak{D} i-3 i; mild Cath. \mathfrak{z} ii-iii.

Potassæ Nitræ, Nitrate of Potassa, Nitre, Saltpetre.—Refrig., Diur., Diaph., Antiseptic. grs. x-xv in water or some mucilaginous liquid, every 2-3 hours; \mathfrak{z} i-iii may be taken in a day.

Potassæ Bicarbonas, Bicarbonate of Potassa, grs. xx-3 i.

Potassæ Bitartras, Bitartrate of Potassa, Cream of Tartar.—Refrig., Aper., \mathfrak{z} i-ii; Hydrag. Cath., \mathfrak{z} ss-i, in molasses or water; Diur. in dropsy, \mathfrak{z} iss-ii, several times a day.

Potassæ Chloras, Chlorate of Potassa.—Refrig., Diur. grs. x-xxx. As mouth wash, teaspoonful of the salt to \mathfrak{z} iv of water.

Liquor Potassæ, Solution of Potassa.—Antac., Diur., Antilith. \mathfrak{m} x-xxx, 2-3 times, and gradually increased in cutaneous affections to \mathfrak{z} i-ii, given in sweetened water or some mucilaginous fluid.

Liquor Potassæ Citratis, Solution of Citrate of Potassa, Neutral Mixture, Saline Mixture, or Effervescing Draught.—Refrig. Diaph. Dose of the solution, \mathfrak{z} ss, somewhat diluted. The effervescing draught is the citrate of potassa in the state of effervescence. The most convenient mode of exhibition is to add to a fluid ounce of a mixture containing equal parts of lemon juice and water, half a fluid ounce of a solution containing grs. xv of the carbonate, or grs. xx of the bicarbonate of potassa. Should effervescence not occur, add more lemon juice. A solution of citric acid, \mathfrak{z} ss; oil of lemons, \mathfrak{m} ii; water, O ss, may be substituted in place of the lemon juice. D. The whole of each draught, prepared as above, to be repeated every 1, 2 or 3 hours, according to symptoms.

Decoction of Quince Seed, Decoctum Cydoniæ.—This is mucilaginous and used externally.

Quassia.—Simple Bitter, Purely Tonic. D. \mathfrak{D} i-3 i, 3-4 times a day. *Extractum*, grs. v, in pill. *Infusum*, \mathfrak{z} ii, 3-4 times a day. *Tinctura* may be used as an addition to tonic infusions or mixtures in doses of \mathfrak{z} i-ii. *Tinctura Quassiæ Composita* \mathfrak{z} i-ii.

Mel Rosæ.—A pleasant addition to the gargles employed in inflammation and ulceration of the mouth and throat.

Rheum, Rhubarb.—Cath. and astring., the cath. effect preceding the astringent. Also Tonic, Stomach. D. as purg., grs. xx-xxx; as laxative and stomach., grs. v-x. *Extractum*, grs. x-xxx. *Infusum*, as gentle lax., $\frac{3}{4}$ i-ii, every 3-4 hours till it operates. *Syrups.* As mild cath. for children, $\frac{3}{4}$ i-ii. *Syrupus R. Aromaticus.* D. for an infant with diarrhea, $\frac{3}{4}$ i every 2 hours till it operates. *Vinum*, $\frac{3}{4}$ i-iv, or more, according to circumstances.

Sodæ Carbonas, Carbonate of Soda.—Antac., Antilith., Resolv. grs. x-3 ss in powder or some bitter infusion.

Sodæ Bicarbonas, Bicarbonate of Soda.—M. P. same as those of the carbonate, but it has a milder taste, less irritating qualities, and is more acceptable to the palate and stomach. D. for adult, grs. x-3 i, taken most conveniently in a glass of carbonic acid water.

Liquor Sodæ Chlorinatæ, Solution of Chloride of Soda.—Stim., Antisep., Resolv. gtts. xxx-3 i. in a cupful of water or mild aqueous liquid, every 2-3 hours. Locally as a gargle or wash, &c., in affections attended with fetor, and diluted more or less. Powerful disinfectant in the sick-room.

Scilla, Squill.—Expect., Diur., in large doses Emet., Purg. When given in substance, the pill is the best form. As Diur. or Expect., gr. i-ii, 2 or 3 times a day, and gradually increased till it produces slight nausea, or acts on the kidneys or lungs. As Emet. grs. vi-xii.

Acitum Scillæ, Vinegar of Squill.— \mathfrak{M} xxx-3 ii: this last quantity may vomit. It should be given in cinnamon or mint-water, or some aromatic liquid to conceal its taste and obviate nausea. *Syrupus S.* $\frac{3}{4}$ i. *Syrupus S. Compositus, Hive Syrup.* D. for children, according to age, gtts. x-3 i, to be repeated in croup every 15 or 20 minutes till it vomits. As Expect. for adults, gtts. xx-xxx. *Oxymel S.* $\frac{3}{4}$ i-ii. *Tinctura S.*, as Expect. or Diur. \mathfrak{M} x-xx, (gtts. xx-xl;) the latter quantity often nauseates.

Scammonium, Scammony.—Energetic Cath. It is apt to gripe or operate harshly. Combining it with other cathartics mitigates its harshness. It should be given in emulsion with mucilage, sugar, almonds, liquorice, or other demulcent; its disposition to gripe may be counteracted by adding an aromatic. D. of pure S. grs. v-xv; of that commonly found in the market grs. x-xxx.

Stramonium.—Powerful Narcot. D. of seed, gr. i twice a day; of Powdered leaves, grs. ii-iii. *Extractum S. Foliorum*, gr. i night and morning, to be gradually increased till it affects the system. *Extractum S. Seminis.* D. to begin with is gr. $\frac{1}{4}$ - $\frac{1}{2}$, twice a day, to be gradually increased. *Tinctura*, \mathfrak{M} x-xx, (gtts. xx-xl,) twice or thrice a day, and gradually increased till it affects the system.

Sarsaparilla.—Alt. D. of *Powder*, 3 ss, 3 or 4 times a day. *Decoctum*, $\frac{3}{4}$ iv-vi, four times a day. *Decoctum S. Compositum*, $\frac{3}{4}$ iv-vi, 3 or 4 times daily. *Extractum S. grs.* x-xx, 3 or 4 times daily. *Infusum*, $\frac{3}{4}$ ii-iv, 3 times a day. *Syrupus S. Compositus*, $\frac{3}{4}$ ss, 3 or 4 times a day.

Senna.—Purg. Its griping may be obviated by combining an aromatic and an alkaline salt, especially bitartrate of potassa, tartrate of potassa or sulphate of magnesia. D. of *Powder* (which is seldom prescribed) 3 ss-ii. *Confectio S., Lenitive Electuary*, 3 ii, at bedtime. *Infusum* $\frac{3}{4}$ iv. *Infusum S. Compositum* $\frac{3}{4}$ ii-iv.

Nux Vomica.—In very small doses, frequently repeated, it is Tonic, and is said to be Diur., and occasionally Diaph. and Lax. In over-doses, it is capable of producing fatal effects. Chloroform has been recommended as a remedy; 3 ii, in one instance, having, in less than 15 minutes, produced complete relief from the effects of grs. iii of strychnia. D. of *Powder of N. V.*, grs. v, 3 or 4 times a day, and gradually increased till its effects are experienced. *Extractum*, gr. ss-ii, 3 times a day. *Tinctura* gtts. v-xx. *Strichnia*, in over-dose, is a violent poison. D. gr. $\frac{1}{12}$ – $\frac{1}{6}$, internally, or gr. $\frac{1}{4}$ – $\frac{1}{2}$, externally upon a blistered surface. It may be gradually increased till its effects are produced. It is administered in pill, or dissolved in alcohol, or in water acidulated with sulphuric, muriatic, nitric, or acetic acid. Remedies for the poison: Chloroform by inhalation; camphor internally, evacuating the stomach; and opiates or other narcotics to relieve the spasm.

Serpentaria, Virginia Snakeroot.—Stim.-Tonic, also Diaph. or Diur., according to its mode of use. D. of powdered root, grs. x-xxx. *Infusum*, $\frac{3}{4}$ i-ii, every two hours in low forms of fever; but less frequently in chronic affections. *Tinctura* 3 i-ii.

Staphisagria, Stavesacre.—The seeds were formerly used as Emet. and Cath., but are too violent. Powdered and mixed with lard, or in infusion in vinegar, they are used externally in some skin diseases, in itch, and to kill lice in the head.

Sulphur.—Lax., Diaph., Resolv. 3 i-iii, mixed with syrup or molasses, or taken in milk. It is often combined with bitartrate of potassa or magnesia. Externally it is used in cutaneous diseases; for scabies it is a specific.

Secale Cornutum, Spurred Rye, Ergota.—Ergot promotes the contractions of the uterus. D. of powdered ergot in labor, grs. xv–xx, every 20 minutes till it acts, or till 3 i has been taken. D. of *Infusum*, (Ergot 3 i, Aq. Bul. 3 iv,) $\frac{1}{2}$ part repeated every 20 minutes. D. for other purposes, grs. x–xv, 3 times a day, and gradually increased, but not long continued. In urgent cases of hemorrhage, the dose may be repeated every 2 hours or oftener, if necessary.

Vinum Ergotæ.—D. during labor 3 ii–iii, for other purposes, 3 i–ii, several times a day and gradually increased if necessary. *Ergotin* grs. v–x. Externally, ergot has checked bleeding, but in lower animals it has caused sloughing. *Tinctura* 3 i–ii.

Sabadilla, Cevadilla.—Acrid drastic, emeto-cath. Seldom used. As antheil., especially in tania, grs. v–xxx have been given. *Veratria* is locally irritant, and exerts a peculiar influence on the nervous system. In over-doses it is a violent poison. For internal use the salts of veratria are preferred. D. gr. $\frac{1}{2}$ to $\frac{1}{6}$ in pill every 3 hours till its effects are noticed. The tartrate, sulphate, and acetate may be used. Externally, dissolved in alcohol, or grs. x–xx or more, to 3 i of lard or other unctuous substance, and used to the amount of grs. iv–viii in a day.

Sedum Acre, not officinal.

Seneka, Senega.—Stim.-Expect. and Diur., in larger doses Emet. and Cath.; also occasionally Diaph., Emmen., and Sialag. *Pulvis* grs. x–xx. *Decoctum* 3 ii, 3–4 times a day; or 3 ss every 2–3 hours. *Infusum* 3 i–iii. *Syrupus* 3 i–ii.

Salix, Willow.—The bark is Tonic and Astring. It may be employed in substance or decoction in the same doses, and with the same mode of preparation as cinchona. D. of *Salicin* grs. ii–viii, to be so repeated that from grs. xx–xl may be taken daily, or in the intervals between the paroxysms of an intermittent. Externally the decoction has been applied to foul and indolent ulcers.

Tabacum, Tobacco.—Sedative Narcot., Emet. and Diur., and as enema, sometimes Cath. Powdered T. grs. v–vi generally Emet., but it is not given in this shape. *Infusum*; this is only used in the form of enema in strangulated hernia, obstinate colic, and retention of urine from spasm of the urethra. Only O ss of U. S. infusion should be employed at once, and, if this should not cause relaxation in half an hour, another O ss may be injected. Fatal consequences have resulted from too free a use of tobacco in this way.

Powder of Tin, Stanni Pulvis, is used exclusively as Anthel. in case of *Ascaris Lumbricoides* and sometimes of tapeworm. D. $\frac{3}{4}$ ss mixed with molasses, given for several successive mornings, and then followed by a brisk Cathartic.

Tannic Acid, Acidum Tannicum.—Astring. D. for ordinary purposes, grs. ii-v; for urgent cases, grs. x. As a wash grs. v to $\frac{3}{4}$ i of water may be used.

Ticunas Poison, not officinal.

Tormentilla, Tormentil.—Simple and Powerful Astring. D. *Pulvis* grs. xxx-3 i. *Decoctum* $\frac{3}{4}$ i-ii 3 or 4 times a day.

Taraxacum, Dandelion.—Slightly Tonic, Diur. and Aper. *Decoctum*, wineglassful 2 or 3 times a day. *Extractum* $\frac{3}{4}$ i-3 i, 3 times a day, and most conveniently given in cinnamon or mint water. *Infusum*, wineglassful 2, 3 or more times daily.

Valeriana, Valerian.—Gently Stim. with an especial direction to the nervous system, but without narcotic effects. *Pulvis*, grs. xxx-xc, 3 or 4 times a day. *Extractum V. Fluidum* 3 i-ii. *Infusum V.* $\frac{3}{4}$ ii 3, 4 or more times daily. *Oleum* gtts. iv-v. *Tinctura* 3 i-iv. *Tinctura V. Ammoniata*, 3 i-ii, and should be given in sweetened water, milk, or some mucilaginous fluid.

Zinci Sulphas, Sulphate of Zinc, White Vitriol.—Tonic, Astringent, and, in large doses, prompt Emet. D. as tonic gr. i-ii; as emet. grs. x-xxx. To children, in whooping-cough, grs. $\frac{1}{8}$ to $\frac{1}{4}$ 2 or 3 times daily. As collyrium, gargle or injection, or as wash for indolent ulcers, grs. i-iii or more to $\frac{3}{4}$ i of water. The crystallized salt only should be used, and never the impure white vitriol of commerce.

Zinci Oxidum.—Tonic, Antispas. grs. ii-viii or more, several times a day in pill form.

Uva Ursi.—Astring., Tonic. *Pulvis*, $\frac{3}{4}$ i-3 i 3 or 4 times a day. *Decoctum* $\frac{3}{4}$ i-ii 3 or 4 times a day. *Extractum* grs. v-xxx.

Wormwood, Absinthium.—Highly Tonic. D. in substance $\frac{3}{4}$ i-ii. *Infusum* ($\frac{3}{4}$ i Aq. B O i) $\frac{3}{4}$ i-ii.

POISONS: THEIR SYMPTOMS AND TREATMENT.*

The Stomach-Pump and Galvanism, Efficient Agencies.

INORGANIC POISONS.

ACIDS.—*Nitric; Sulphuric; Hydrochloric; or Muriatic.*

SYMPTOMS.

The acids, generally, are strong corrosive poisons. They produce a sour, acrid taste; burning in the throat, which is increased by pressure, swallowing, or coughing; cruetation and excruciating pain in the stomach; more or less corrugation of the lining membranes of the mouth and *primæ viæ*; excoriation about the mouth or such other parts of the skin as the acid may have touched. The matter vomited effervesces with carbonate of lime. The countenance becomes glazed, extremities cold and clammy; followed by convulsions and death. Nitric acid occasions yellow stains; sulphuric, black.

TREATMENT.

The carbonate of soda, potassa, lime, and magnesia, are all antidotes to the acids; calcined magnesia also. They are to be used with the following restrictions: For muriatic and sulphuric acids, they may be used indiscriminately. For nitric, carbonates of magnesia and lime can alone be employed with safety. In the case of sulphuric acid, water should not be drank on account of the great heat which is produced by the mixture. Subsequent inflammation to be treated by ordinary means.

The carbonates of the alkalis and of magnesia and lime have the inconvenience that a large quantity of gas is formed in the stomach. Soft soap and milk are the readiest antidotes at hand.

PRUSSIC ACID

Is a sedative poison, producing nausea, giddiness, debility, hurried pulse, weight and pain in the head; eructations having the flavor of the acid; spasms, tetanus, contractive pupil, convulsions, death.

Ammonia is an antidote, but it should not be employed in a very concentrated form. Liquid chlorine has also been found efficacious. The cold *douche*, or *positive electricity* to the spine, has been recommended.

ALKALIES AND THEIR SALTS.—*Ammonia. Strong Liquor, or Water of Ammonia. Muriate of Ammonia; Salammoniac.*

Violent, caustic, acrid taste; great heat in the throat, with destruction of its lining membrane; difficult and painful deglutition; vomiting of bloody matter, which turns the yellow of turmeric brown; acute pain in the stomach; cold sweats, weakness, hiccough, violent colic pains, with purging of bloody stools, and membranous flakes; death.

The vegetable acids, such as vinegar, lemon juice, citric and tartaric acid, in solution, are antidotes to the alkalies and their carbonates. The fixed oils, such as castor, linseed, almond, and olive, form soaps with the free alkalies, and therefore destroy their caustic effects.

* Some parts of the present tables are extracted from the Medical Dictionary of Dr. Dunglison.

CAUSTIC POTASH.—*Potassa. Liquor Potassæ. Strong Ley. Carbonate of Potassa, or Pearl Ash. Salt of Tartar. Nitrate of Potassa, or Saltpetre. Sulphuret of Potassium, or Liver of Sulphur. Soda.*

SYMPTOMS.

The nitrate of potassa will not manifest the effect with turmeric paper.* The carbonates, when vomited, will effervesce with acids; and the liver of sulphur will give rise to eructations of sulphuretted hydrogen.

* See *Alkalies*, &c.

TREATMENT.

Poisoning by nitrate of potassa to be treated on general antiphlogistic principles; mucilaginous drinks. Liver of sulphur is said to be decomposed and neutralized by common salt. The liquid chloride of soda will also decompose it.

EARTHS AND THEIR COMPOUNDS.—*Baryta. Carbonate of Baryta. Muriate of Baryta. Nitrate of Baryta. Lime.*

Analogous with those of the corrosive metals. Violent burning in the stomach, vomiting, gripes, diarrhea; excessive muscular debility; headache, convulsions; death. Lime differs from baryta in being a pure irritant.

The sulphates of soda and magnesia are proper and effective antidotes to all the poisonous salts of baryta. Phosphate of soda will also counteract their effects. Lime may be neutralized by dilute acids. Carbonic acid in soda water, effervescing draught or yeast, it is supposed, would answer a good purpose. The fixed oils may be employed either for baryta or lime, when not in a compound state.

GASES.—*Carbonic Acid, or Fixed Air. Carbonic Oxide. Fumes of burning Charcoal. Chlorine. Sulphuretted Hydrogen.*

Chlorine produces, when inhaled, violent irritation of the organs of respiration; cough, bloody expectoration, inflammation of the lungs, and permanent pulmonary disease. The other gases, although producing some effect on the respiratory organs, especially asphyxia, due to spasm of the glottis, act, in smaller quantities, as poisons, in consequence of their sedative agency. The symptoms, therefore, are either those of asphyxia, or of apoplexy, or narcotic poisoning.

The antidotes to chlorine are, the cautious inhalation of ammonia, or sulphuretted hydrogen. The inflammatory symptoms of chlorine to be treated on general principles. For the other gases, cold affusions to the head; the cold dash followed by friction; artificial respiration; positive electricity to the upper part of the spine, the negative pole on the chest, over the diaphragm.

Liquor Sodæ Chlorinatæ, 30 to 60 drops, for sulphuretted hydrogen.

IODINE.—*Iodide of Potassium.*

Irritant symptoms: burning pain in the throat, lacerating pain in the stomach, and fruitless efforts to vomit; suffusion of the eyes; excessive pain and tenderness of the epigastrium.

Iodine combines with starch, and forms an insoluble compound. The prompt administration of starch, wheat flour, or other vegetable matter containing fecula, beat up in water, is recommended. Iodide of potassium has no antidote. Vomiting should be promoted by draughts of warm water, and inflammation be subdued by general treatment.

METALS.—*Antimony. Tartar Emetic. Muriate, or Butter of Antimony. Oxide of Antimony.*

SYMPTOMS.

VOMITING.—If vomiting does not occur promptly, violent irritant effects are produced. Burning pain in the pit of the stomach; purging; colicky pains; sense of tightness in the throat; violent cramps; repeated recurrence of vomiting.

ARSENIC.—*Arsenious Acid, or White Arsenic. Orpiment, or Yellow Sulphuret of Arsenic: King's Yellow. Realgar, or Red Sulphuret of Arsenic. Fly Powder. Fowler's Solution. Arsenical Paste. Arsenical Soap. Arsenite of Copper: Scheele's Green. Cobalt, (Arsenic, sometimes so called.)*

Violent burning pain in the region of the stomach and bowels; tenderness on pressure; retching; vomiting; sense of dryness and tightness in the throat; thirst; hoarseness and difficulty of speech. The matter vomited greenish or yellow, sometimes streaked with blood; diarrhea, tenesmus, sometimes excoriation of the anus; urinary organs occasionally affected with violent burning pains, and suppression; convulsions, cramps, clammy sweats; lividity of the extremities; countenance collapsed; eyes red and sparkling; delirium; death.

TREATMENT.

If vomiting has not been produced, it should be effected by tickling the fauces, and administering copious draughts of warm water. Astringent infusions, such as of gall, oak bark, Peruvian bark, act as antidotes, and should be given promptly. Powdered yellow bark may be used until the infusion is prepared.

The **HYDRATED PEROXIDE OF IRON**, recently prepared, diffused through water, or the precipitated carbonate, or the *Rubigo Ferri* in very fine powder, to be administered every five or ten minutes, until relief is obtained. This is particularly efficacious, when the *white arsenic* has been swallowed. If the arsenic have been taken in the form of Fowler's solution, lime water in copious draughts may be given. For either of the other forms, emetics of sulphate of zinc; diluents, demulcents, such as flax-seed tea, infusion of slippery elm, &c. Counter-irritants and demulcents may always be used to relieve the spasm, irritation, and violent pain in the stomach. *Hydrated Magnesia* may be used when the preparation of iron cannot be obtained.

BISMUTH.—*Nitrate of Bismuth: Pearl Powder. Oxide of Bismuth.*

COPPER.—*Sulphate of Copper: Blue Vitriol. Acetate of Copper. Verdigris. Carbonate of Copper. Blue Verditer. Arsenite of Copper: Scheele's Green. Food cooked in dirty Copper Vessels, or Pickles made green by Copper.*

Similar to those produced by other irritant poisons, general inflammation of the whole alimentary canal; suppression of urine; hiccough; a disagreeable metallic taste; vomiting; cramp; delirium; death.

Symptoms of copper very similar to those of arsenic. Coppery eructations and taste. Fatal cases are generally terminated by convulsions, palsy, insensibility.

Milk and sweet mucilaginous drinks are recommended. Leeches, clysters, fomentations, to be employed on the general principles of treatment for inflammatory symptoms. In case of poison by **COPPER**, *albumen* should be administered in the form most readily obtained, as milk or white of eggs. Vinegar should *not* be given. The inflammatory symptoms are to be treated on general principles, and so of the nervous.

GOLD.—*Chloride of Gold. Fulminating Gold.*

SYMPTOMS.

Very analogous to those of other irritant poisons. This substance communicates a pink stain to the flesh, and patches of that color may be found about the lips and inside the mouth.

TREATMENT.

The salts of gold are decomposed by sulphate of iron; and this has therefore been recommended as an antidote. Inflammatory symptoms to be treated on general principles; as with mucilage, &c.

IRON.—*Sulphate of Iron, or Coppras: Green Vitriol. Chloride of Iron.*

Symptoms of irritant poisoning; colic pains; constant vomiting and purging; violent pain in the throat; tension of the epigastrium; coldness of the skin, and feebleness of the pulse.

Carbonate of soda is an excellent antidote to either of these substances. Mucilaginous drinks also should be given, and particular symptoms relieved by general treatment.

LEAD.—*Acetate of Lead: Sugar of Lead. Carbonate of Lead: White Lead. Red Oxide of Lead: Litharge. Wines sweetened by Lead. Water kept in Leaden Vessels, or Pipes. Food cooked in Vessels glazed with Lead.*

Irritation of the alimentary canal; spasm, nervous symptoms; paralysis, either partial or complete. When taken for some time in small quantity, violent and obstinate colic; rigidity of the abdominal muscles; cramps; remission of pain; obstinate constipation; urine diminished; saliva increased; countenance anxious and gloomy. If relief be not promptly obtained, giddiness, debility, torpor, coma, convulsions, and death. The paralysis affects, generally, the upper extremities.

Sulphate of magnesia and phosphate of soda are both good antidotes for the soluble salts of lead. For the solid forms, dilute sulphuric acid may be drunk. These are applicable to the irritant forms of poisoning by lead. In the chronic form, or *Colica Pictonum*, purgatives, anodynes, warm bath, galvanism, and chlorate of potash. External applications to relieve cramps. For the paralysis, dilute sulphuric acid, galvanism, and general treatment.

MERCURY.—*Corrosive Sublimate. Cyanuret of Mercury. Nitrate of Mercury. White Precipitate. Red Oxide, or Red Precipitate. Sulphite, or Turbith Mineral. Vermilion, or Red Sulphuret.*

Violent symptoms of irritant poisoning; harsh metallic, astringent taste; burning pain in the stomach; vomiting and purging, frequently of bloody matter; often irritation of the urinary organs, and sometimes suppression; tightness and burning in the throat, occasionally so great as to prevent speech; countenance not always pale, but sometimes flushed; tendency to doze; stupor, convulsions, and death.

Albumen, in some form, must be promptly given; either the white of eggs, beaten up with water, or milk, or wheat flour beaten up. The inflammatory symptoms to be counteracted by the usual means.

SILVER.—*Nitrate of Silver, or Lunar Caustic.*

SYMPTOMS.

Those of other irritant poisons.

TREATMENT.

Chloride of sodium (common salt) immediately decomposes this substance, and destroys its activity. Antiphlogistic treatment is to be employed for the inflammatory symptoms.

TIN.—*Chloride of Tin, Solution of Tin, used by Dyers. Oxide of Tin, or Putty Powder.*

The same as those of other irritant poisons.

Albumen, or milk, to be given copiously; and the subsequent treatment to be regulated by the symptoms.

ZINC.—*Oxide of Zinc. Sulphate of Zinc: White Vitriol. Acetate of Zinc.*

Violent vomiting; astringent taste; burning pain in the stomach; pale countenance; cold extremities; dull eyes; fluttering pulse. Death seldom ensues, in consequence of the emetic effect.

The vomiting may be relieved by copious draughts of warm water. Carbonate of soda, administered in solution, will decompose the sulphate of zinc. Milk and albumen also act as antidotes. General principles to be observed in the subsequent treatment.

PHOSPHORUS.

Symptoms of irritant poisoning; pain in the stomach and bowels; vomiting; diarrhea; tenderness and tension of the abdomen.

An emetic to be promptly given; copious draughts, containing magnesia in suspension; mucilaginous drinks. General treatment for inflammatory symptoms.

GLASS OF ENAMEL.

If taken in coarse powder, it produces irritation, and inflammation of the bowels.

White of egg, wheat flour in water, thick gruel; and general treatment.

ORGANIC POISONS.

VEGETABLE POISONS.

VEGETABLE ACIDS.—*Acetic, Citric, Tartaric, and Oxalic Acids. Vinegar.*

The symptoms of the vegetable acids proper, and of vinegar, in excessive doses, are essentially the same as those of the mineral acids, as nitric, &c.—which see.

For the acetic, citric, and tartaric acids, and vinegar, the treatment will be similar to that for muriatic and sulphuric acids, which see. For oxalic, as for nitric acid, only the carbonates of lime and magnesia can be safely used; never those of the alkalies.

BITTER ALMOND OIL.—*Laurel Water.*

Dangerous from liability to conversion into *prussic acid* within the system. See Prussic Acid.

Treatment, that for prussic acid.

ALCOHOL.—*Brandy, Wines; all Spirituous Liquors.*

SYMPTOMS.

Intoxication, and, when taken very freely, complete insensibility, with apoplexy, or paralysis of one side; the countenance swollen and of a dark-red color; the breathing difficult, and often stertorons, with a peculiar puffing out of the lips; the breath smells of liquor, which will distinguish the symptoms from those of spontaneous apoplexy.

TREATMENT.

A powerful emetic of sulphate of zinc, or pulverized mustard, should be given as soon as possible; and if the patient is unable to swallow, a flexible tube should be used to convey it into the stomach. The vomiting should be encouraged as much as possible with warm water; and a large clyster of salt and water should be thrown up. The patient should be placed erect, and cold, wet cloths applied to the head; particularly if the body be hotter than natural. If the extremities become cold, warmth and friction should be perseveringly used.

VOLATILE OILS.—*Creasote. Dippel's Animal Oil. Oil of Tar. Oil of Tobacco. Oil of Turpentine. Fusel Oil.*

General action that of irritant poisons. Burning pain, vomiting, pungent taste, purging, &c. The oils of turpentine and tobacco affect the nervous system. The peculiar odor of each oil will be manifested in the matters vomited.

Creasote is immediately rendered inert by coagulating albumen; the latter, therefore, should be freely given. Dippel's animal oil may be counteracted with dilute acids and the fixed oils. The other oils have no particular antidotes, and their effects must, therefore, be counteracted upon general principles.

IRRITANT VEG. POISONS.—*Arum Triphyllum: Indian Turnip. Croton Tiglium: Croton Oil. Cucumis Colocynthis: Colocynth. Dioica Pulestris: Leather-wood. Juniperus Sabina: Oil of Savin. Phytolacca Decandra: Poke; Scocke. Podophyllum Peltatum: Mandrake. Ricinus Communis: Castor Oil Plant. Tanacetum Vulgare: Oil of Tansy.*—Many others of this class.

The general effects of this class of vegetable poisons are, an acrid, pungent taste, with more or less of bitterness; excessive heat; great dryness of the mouth and throat, with sense of tightness there; violent vomiting; the effort being continued even after the stomach is emptied; purging, with great pain in the stomach and bowels; pulse strong, frequent, and regular. Breathing often quick and difficult. Appearances of intoxication; the pupil of the eye frequently dilating; insensibility resembling death; the pulse becomes slow, and loses its force, and finally death ensues.

If vomiting has been occasioned by the poison, and the efforts are still continued, they may be rendered easier by large draughts of warm water or thin gruel. But if symptoms of insensibility have come on, without vomiting, it ought to be immediately excited by ground mustard, or sulphate of zinc; and after the operation an active purgative should be given. After evacuating as much of the poison as possible, a very strong infusion of coffee, or vinegar diluted with water, may be given with advantage. Camphor mixture, with either, may be taken frequently; and if insensibility be considerable, warmth and friction may be applied, and mustard to the spine. If inflammation or other consequences have been induced, they are to be treated upon general principles. The fruit of *Feuillea Cordifolia*

If applied externally many of them produce severe inflammation of the skin, with vesications, or eruptions of pustules.

has been lately recommended as a powerful antidote to vegetable poisons. It is to be used in as recent a state as possible.

Bromine, chlorine, and iodine are said to be antidotes to the alkaloids generally.

ACRO-NARCOTIC AND NARCOTIC POISONS.—*Aconitum Napellus*: Aconite. *Amygdalus Communis*: Bitter Almonds, (Oil.) *Atropa Belladonna*: Deadly Nightshade. *Cicuta*: Hemlock, (Several species.) *Conium Maculatum*: Poison Hemlock. *Datura Stramonium*: Thorn-apple. *Digitalis Purpurea*: Foxglove. *Hyoscyamus*: Henbane, (Several species.) *Nicotiana Tabacum*: Tobacco. *Nux Vomica*, *Strychnine*, &c. *Opium*, *Morphine*, &c. *Rhus Toxicodendron*: Poison Oak, or Sumach. *Secale Cornutum*: Ergot; Smut Rye. *Veratrum Album*: White Hellebore. Many others of the same class.

The narcotic vegetable poisons, if taken into the stomach, or applied to a wound, occasion the following effects: stupor, numbness, heaviness in the head, desire to vomit, slight at first, but afterward insupportable; a sort of intoxication, stupid air, pupil of the eye dilated; furious or lively delirium; sometimes pain, convulsions of different parts of the body, or palsy of the limbs. The pulse is variable, but at first generally strong and full. The breathing is quick, and there is great anxiety and dejection, which, if not speedily relieved, ends in death.

The stomach must be effectually evacuated by frequent emetics of mustard or sulphate of zinc, often repeated, till the full effect is produced. These means may be assisted by tickling the throat with a feather or the finger. If the drowsiness, which is sometimes extreme, and the insensibility, bordering on apoplexy, be not remedied by these means, the patient should be kept in motion, and acute pain produced by flagellation, with small rods, or in any more convenient manner, till the attention is aroused. If the heat declines, warmth and friction must be used with energy. Vegetable acids are, on no account, to be given before the poison is expelled; and a large amount of any liquids should not be allowed. After the poison has been removed, however, strong coffee may be administered once in twenty or thirty minutes, with a few drops of aqua ammonia added; and alternated with a little vinegar diluted in water. Galvanism may be so applied as to prove a very efficient agent, by sustaining the respiration when it becomes feeble. In severe cases, the current may be kept up almost unremittingly, for hours, but not too strongly, for fear of injury; and thus applied, it has resulted in saving life. The *positive pole* should be applied to the inner surface of the cheek, occasionally shifting it, so as not to produce excoriation; and the *negative pole* over the diaphragm, just above the pit of the stomach, (over the ensiform process.) In poisoning by *Nux Vomica*, *Strychnine*, &c., chloroform should be inhaled to quiet the spasms, as often as these return, or as the constitution will bear.

POISONOUS MUSHROOMS.—*Agaricus Bulbosus*: Bulbous Agaric. *A. Chantarellus*: Champignon Agaric. *A. Muscarius*: Fly Agaric. *A. Necator*: Deadly Agaric. *A. Piperatus*: Pepper Agaric.

SYMPTOMS.

Nausea, heat, and pain in the stomach and bowels; vomiting and purging; thirst; convulsions and faintings; pulse small and frequent; dilated pupil and stupor; cold sweats, and death.

TREATMENT.

The stomach and bowels to be cleared by an emetic of ground mustard or sulphate of zinc, followed by frequent doses of Glauber's or Epsom salts, and large stimulating elysters. After the poison is evacuated, ether may be given with small quantities of brandy and water. But if inflammatory symptoms manifest themselves, such stimuli should be avoided, and these symptoms appropriately treated.

ANIMAL POISONS.

POISONOUS FISH.—*Balistes Monoceros*: Old Wife. *Cancer Astacus*: Crawfish. *Cancer Ruricolis*: Land Crab. *Clupea Thryssa*: Yellow-billed Sprat. *Coracinus Fuscus Major*: Gray Snapper. *Coracinus Minor*: Hyne. *Coryphæna Splendens*: Dolphin. *Mormyra*: Blue Parrot-fish. *Muraena Major*: Conger Eel. *Mytilus Edulis*: Mussel. *Ostracion Globellum*: Smooth Bottle-fish. *Perca Major*: Barraenda. *Perca Venenosa*: Grooper. *Perca Venenata*: Rock-fish. *Physalia*: Portuguese Man-of-War. *Scomber Cceruleus*: Spanish Mackerel. *Scomber Muximus*: Kingfish. *Scomber Thyannus*: Bonnetta. *Sparus Chrysops*: Porgee. *Tetrodon Secleratus*: Tunny. *Tetrodon Ocellatus*: Blower.

In an hour or two—often in a much shorter time—after the fish has been eaten, a weight at the stomach comes on, with slight vertigo and headache; sense of heat about the head and eyes; considerable thirst, and often an eruption of the skin, (urticaria;) in many cases followed by death.

An emetic should be speedily given, of ground mustard or sulphate of zinc, tickling the throat with the finger; large draughts of warm water. After full vomiting, an active purgative should be given to remove any of the noxious matter from the intestines. Vinegar and water may be drank after the above remedies have operated; and the body may be sponged with the same. Water made very sweet with sugar, to which ether may be added, may be drank freely as a corrective. A solution of chlorate of potash, or of alkali, the latter weak, may be given to obviate the effects of the poison. If spasm ensue after evacuations, laudanum in considerable doses is necessary. If inflammation should occur, combat in the usual way.

POISONOUS SERPENTS.—*Boa Crotaloides*: Copperhead. *Cenchrus Mockeson*: Mockeson. *Cerastes Nasicornis*: Horned Viper. *Coluber Berus*: Viper. *Coluber Prestor*: Black Viper. *Crotalus*, (five species:) Rattlesnake. *Scytale Piscivorus*: Water Viper.

SYMPTOMS.

A sharp pain is felt in the wounded part, which soon extends over the limb or body; great swelling; at first hard and pale, then reddish, livid, and gangrenous in appearance. Faintings, vomitings, convulsions, and sometimes jaundice; pulse, small, frequent, and irregular; breathing difficult; cold sweats; sight fails; intellectual faculties are deranged; inflammation, and often extensive supuration and gangrene, followed by death.

TREATMENT.

A eupping-glass to be applied over the wound, or a moderately tight ligature above the bites, and the wound left to bleed, after being well washed in warm water. The actual cautery, lunar caustic, to be then applied to it; afterward covered with lint dipped in equal parts of olive oil and spirits of hartshorn. If the inflammation be considerable, remove the ligature. Warm, diluting drinks, and small doses of ammonia to cause perspiration; the patient to be well covered in bed, and a little warm wine given occasionally. If gangrene be threatened, wine may be given more freely; bark should also be given. Arsenic, the principal ingredient in the Tanjore pill, has been strongly recommended.

BLISTERING FLIES.—*Cantharis Vesicatoria*: Spanish Fly. *Cantharis Vitata*: Potato Fly.

Nauseous odor of the breath; acrid taste; burning heat in the throat, stomach, and abdomen, frequent vomiting, often bloody, with copious bloody stools; excruciating pain in the stomach, painful and obstinate priapism, with heat in the bladder; strangury; retention of urine; frightful convulsions, delirium, death.

Vomiting to be excited by drinking sweet oil, sugar and water, milk or linseed tea, very freely. Emollient clysters should be given. If inflammation of the stomach, kidney, or bladder occur, let it be appropriately treated.

Camphor dissolved in oil may be rubbed over the thighs.

VENOMOUS INSECTS.—*Tarantula*. *Scorpio*: Scorpion. *Vespa Crabro*: Hornet. *Vespa Vulgaris*: Wasp. *Apis Mellifica*: Bee. *Culex Pipiens*: Gnat. *Estrus Bovis*: Gad-fly.

In general the sting of these insects occasions only a slight degree of pain and swelling. But sometimes the symptoms are more violent, and sickness and fever are produced by the acuteness of the pain.

Hartshorn and oil may be rubbed on the affected part, and a piece of rag, moistened in the same, or in salt and water, may be kept upon it, till the pain is removed. A few drops of hartshorn may be given frequently in a little water; and a glass or two of wine may be taken. The sting may in general be removed by making strong pressure around it with the barrel of a small watch-key.

SALIVA OF THE RABID DOG. (*Hydrophobia.*)

SYMPTOMS.

At an uncertain interval after the bite, generally between the twentieth day and three or four months, pain or uneasiness occurs in the bitten part, though the wound may have been long healed. Anxiety, uneasiness, languor, spasms, horror, disturbed sleep, difficult respiration, succeed, and are soon very much increased. Violent convulsions affect the whole body, hideously distorting the muscles of the face. The eyes are red and protruding; the tongue swells, and often hangs out, and viscid saliva flows from the mouth; there is pain in the stomach, with bilious vomiting, a horror of fluids, and impossibility of drinking them. All these symptoms are aggravated till the sufferer is relieved by death.

TREATMENT.

The wound or bite should be eupped as soon as possible; after which apply the caustic potash until an eschar is formed; then apply a yeast poultice, and keep up a discharge as long as possible. Give strong infusion of sculleap through the day, and sulphur and cream of tartar at night. Frequent and long-continued vapor-baths should be given.

In the attack, let chloroform be inhaled to quiet the spasms; as often as these return or as the constitution will bear.

The tincture of muriate of iron is an invaluable remedy. It should be given in full doses, commencing immediately after the bite and continue for at least thirty days.

A recent French authority declares that the poison of *rabies* is neutralized and destroyed by simply washing out the wound thoroughly, provided this can be done early enough, with hot water, hot as can be borne by the person. After this, it is only necessary to cauterize the wound freely with nitrate of silver or caustic potash, and then apply the usual stimulating ointments until it is healed.

E R R A T A .

The proof-sheets not having been revised by the Author, the following typographical errors are here corrected :

Page 37, line 13, for "Turiform" read "Puriform."

" 39, " 33, " "hardy" read hard."

" 53, " 1, " "parrigo" read "porrigo."

" 57, " 39, " "numbruss" read "numbness."

" 59, " 21, " "infected" read "injected."

" 70, " 10, " "titanic" read "tetanic."

" 74, " 15, " "valves" read "halves."

" 95, " 15, " "infected" read "injected."

" 103, " 10, " "unconnected" read "connected."

" 115, " 5, " "gracudo" read "gravedo."

" 120, " 22, " "Farina" read "Ferina."

" 121, " 26, omit "prohibit meat." [after "draught."

" 121, " 37, insert "every fourth hour for several days"

" 121, " 49, for "one" read "two."

" 121, " 50, " "one-half" read "one part."

" 127, " 18 and 21, for "pleurodym" read "pleurodynia."

" 128, " 30, for "succession" read "succussion."

" 142, " 1, " "nominally" read "normally."

" 146, " 32, " "reflex" read "reflux."

" 170, " 7, " "sulphate" read "sulphite."

" 185, " 50, " "dilated" read "diluted."

" 186, " 38, " "alkali" read "alkaline."

" 195, " 44, " "equalities" read "qualities."

" 198, " 29, " "and gr. $\frac{1}{4}$ " read "or gr. $\frac{1}{4}$."

" 204, " 21, " "bitter" read "better."

" 219, " 6, " "zinc" read "chloride of zinc."

" 234, " 8, " "urine" read "wine."

" 239, " 56, " "symptoms" read "eruptions."

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